



**MSK-98**

# **Brine Injector Operation Manual**

## **Operation Manual**

Version 6.9.1

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# **MSK-98 Brine Injector Introduction**

The Promax MSK-98 brine injector has been designed and manufactured utilizing advanced technology and electronics. It has been designed to promote ease of operation and reliable performance. The machine incorporates a complete safety system for the protection of the operator.

The step feed system on the MSK-98 uses a hydraulic motor drive for unsurpassed accuracy. The three piece removable feed shoe facilitates ease of cleaning. The machine utilizes an advanced air head design that produces a perfect injection effect for both bone in and boneless products.

The injection frequency, injection pressure, injection rate as well as the step spacing is all adjustable to meet your specific requirements.

The MSK-98 is equipped with a three stage filtration system that prevents scrap from clogging the needles and causing jamming. The brine tank is equipped with an agitator to help prevent the holes in the filter from becoming clogged and the unique pneumatic needle cleaning helps speed up the needle cleaning process.

# 1. Technical parameter

First injecting rate :  $\geq 140$

Second injecting rate :  $\geq 180$

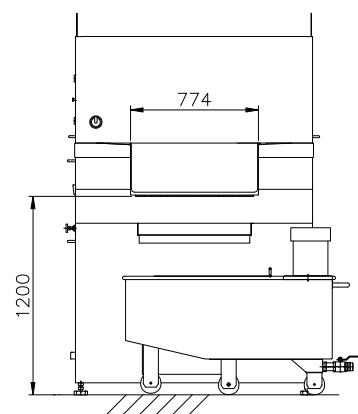
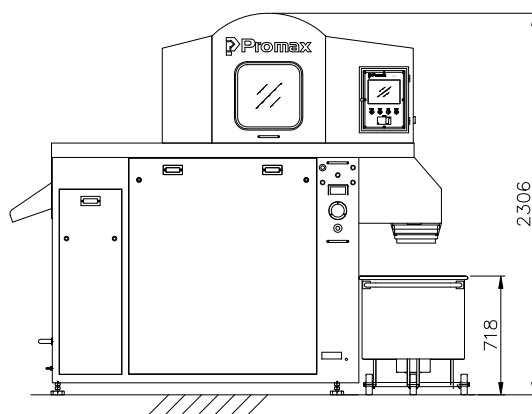
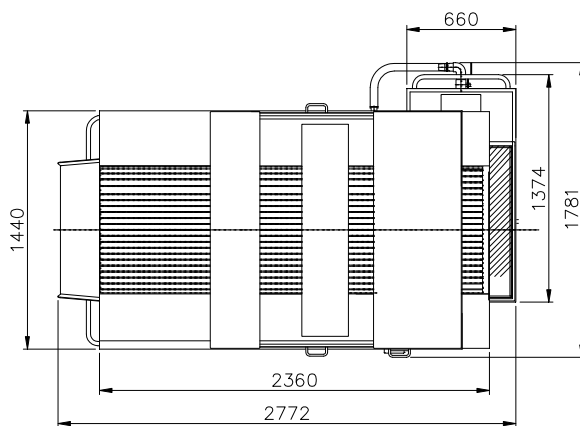
Injecting speed : 15-56 times/min

Power : 220V 60Hz

Pressure : 0.2-0.5Mpa

Needle quantity : 98

Specification : MSK-98



## 2. Installation

**2.1 Placing and Leveling the Machine:** There are four wheels and four spiral anchors on the bottom of the machine. When moving the machine, screw in the anchors and the four wheels can carry the machine. Once the machine is in the designated site, screw out the anchors counter clockwise, then the four wheels will lift off the ground and adjust the anchors to level the fuselage.

**2.2 Compressed Air Connection:** There is a compressed air hose union on the left bottom of the machine's back which can be used for this connection.

**2.3 Main Power Connection:** The MSK-98 comes with a power cord attached. The electrical requirements can be found on the machine's serial number plate located at the rear of the machine. Promax recommends that the main power connection be installed by a certified electrician who is familiar with your local building codes

**2.4 Brine Preparation:** Make sure the brine does not contain granules or long fibers and does not contain ingredients that will erode stainless steel or Teflon. Check to make sure that the quick change couplers on the hose that connects the brine tank to the injector are firmly fastened and that the level of brine in the tank is higher than the inlet of the brine pump.

## 3. Items to Check Before Start Up

**3.1** The four doors and the top-hoods must be closed otherwise the machine cannot be run. The PLC control system will indicate whether all the doors are closed and the safety interlocks engaged.

**3.2** Check the level of the brine in the brine tank. It must be above the height of the brine pump inlet. Caution: To run the pump with the brine level too low can cause the pump to fail.

3.3 Check to make sure that the brine in the tank is clean and free of any foreign debris.

## 4. Cleaning

4.1 **Cleaning the Brine Pipe:** Once the injection process has been completed another complete cycle should be run using clean water. This will remove any sediment or residue from the brine system.

4.2 **Cleaning the Housing:** Withdraw the lace bar first, then take out the gear frame and wash out the water channel.

### 4.3 Needle Cleaning Procedure

#### 4.3.1 Needle head removal

- a. Release air pressure from the needle head air valve.
- b. When the injecting station is at location bottom.
- c. turn off the “needle air”
- d. Pull out the 4 pin sets from injecting station (2 pin sets at front side + 2 pin sets at rear side).
- e. Turn on the “needle head”, its lamps will lighten up, then the injection station goes up.
- f. Move the injecting station to left, and then change the needles.
- g. After finishing change the needles, move the injecting station back to right.
- h. Check the 2 sensors (one of each front and back), if the injecting station back to the correct location the sensors will lighten up.
- i. Turn off the “needle head”, the injecting station goes down.
- j. Put in 4 pin sets back to injecting station.
- k. Turn on the “needle air”
- l. Solve out any fault status showing on the display, then the machine can work again.

#### 4.3.2 Needle removal

- a. Pull upward on needles to remove them.

#### 4.3.3 Needle cleaning

- a. Insert needle into needle cleaner.
- b. Press needle cleaner button (on control board). Air will remove material

from needle.

#### 4.3.4 Needle replacement

- a. Lightly lubricate the needle with food grade grease. This grease may be ordered from your dealer (reference part # 0123456) Important note: This grease was specifically chosen for proper operation of the injector head. The warranty on the injector head depends on the proper use and application of this grease.
- b. Re-insert the needle into the head and lower scraper block. Make sure the needle is flush with the head.
- c. After all the needles are installed remove any excess grease. However make sure the heads of the needles are lightly greased.

#### 4.3.5 Needle Head Replacement

- a. Return the needle head carefully to the original position.
- b. Return ring push pins to the locking position.
- c. Lift air valve to return the air pressure to the needle head.

## 5. Maintenance

**5.1 Daily Visual Inspection:** The machine should be subject to a through visual inspection to determine if any parts are showing undue wear or damage. Repair or replace any such part before start up. If the machine has just been brought out of storage it should be completely lubricated before use.

**5.2 Cleaning:** The machine should be washed at the end of each shift and all key operating parts should be oiled to prevent excess wear because of the wet environment.

**5.3 Brine Considerations:** To ensure that the brine is clean do not use any insoluble ingredients, such as long fibers, minced meat or hard particles. To

use such ingredients can easily cause jamming of the needles and the brine pump.

5.4 **Brine Filters:** Keep the two stage brine filter screens clean at all times and replace or repair them if they become worn.

5.5 **The Reducer:** The reducer must be oiled after the first 100 hours of use and then regularly every 2500 hours of use. Promax recommends the following lubricants: N220-320 for ambient.

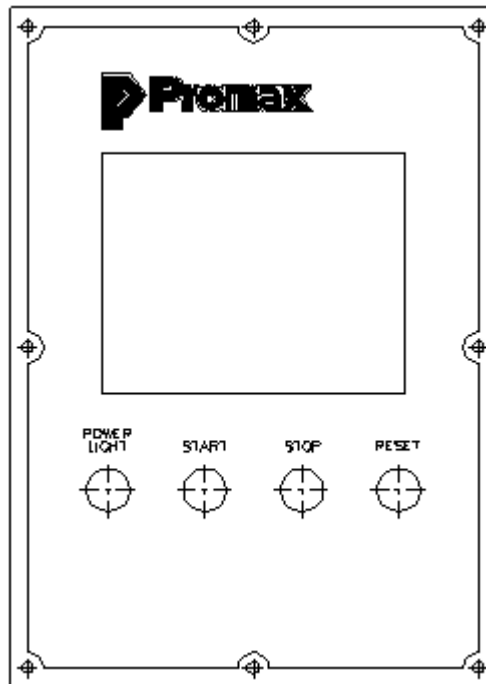
## 6. Troubleshooting

| Problem                                 | Reason analysis   | Solution   |
|---|---|--|
| No water comes out from the needle tube | Brine pump jam<br>Needle tube jam<br>Brine pump motor trouble                       | Clean up obstruction on the brine pump<br>Blow out obstructions in the needles or change needles<br>Motor's wire error, brine pump's |
| Water yield is not enough               | Brine pump or needle tube jams<br>Pressure is too low                               | Clean up obstructions<br>Change spillway discharge   |
| Noise from pressure regulating valve    | Pressure is in the range of jolting   | Change the pressure out from the range of jolting  |
| Brine chamber leaking                   | There is cleft in the needle tube<br>The joint ring in the brine chamber is damaged | Change needle<br>Replace with new joint ring   |



|                     |  |                             |
|---------------------|--|-----------------------------|
| air chamber leaking | The joint ring in the air chamber is damaged | Replace with new joint ring |
|---------------------|--|-----------------------------|

## 7. Operating Parameters



**PROMAX INC. U.S.A.**

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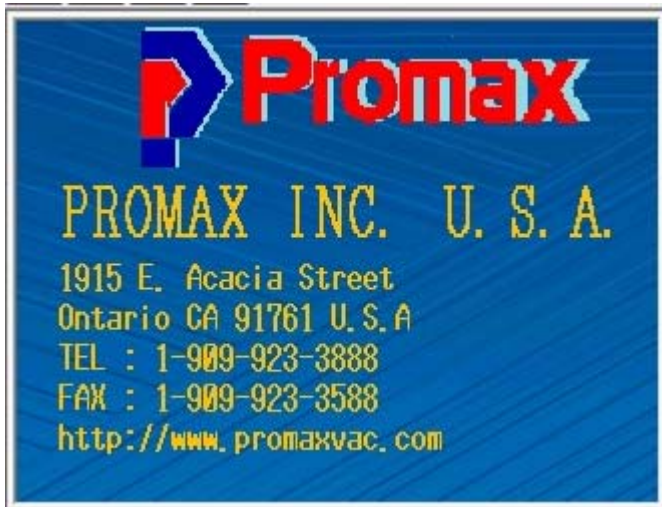
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When power is on, please check the display on the touch screen if there is any phase error showing. Once there is a phase error, please check the phase rotation.

1. At the Promax start up page, touch anywhere of screen to go into operation page.



(PROMAX START UP PAGE)

2. Main operation page:
  1. Auto mode
  2. Manual mode
  3. Injecting head change
  4. Belt wash
  5. Fault history
  6. Data input
  7. Signal input
  8. Signal output



(MAIN OPERATION PAGE)

Note:

{1.} Once the “STOP” light is on with any failure messages showing on the bottom screen, please fix it accordingly then press the “RESET” (YELLOW BOTTOM) to dissolve the safety protect lock.

### 3. Setting up the “DATA INPUT” before machine starting injecting.

(1) 、 Press the “DATA INPUT” icon  to go to “DATA INPUT” page.



(2) 、 Enter “PARAMETER” 1-30, total 30 sets/programs can be used and chosen.



(3) 、 Enter “PRODUCT” name 

(4) 、 Enter “BELT WALKING DISTANCE” (Min 1- Max 500)



Index distance per cycle:

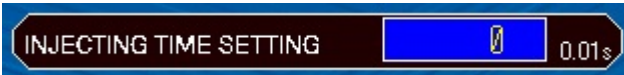
Basic parameter is 15mm per unit.

Minimum setting parameter is “1”, Maximum setting parameter is “500”.

Ex: If the setting parameter is “2”, so  $2 \times 15\text{mm} = 30\text{mm}$

30mm will be the index distance per cycle.

(5) 、 Enter “INJECTING TIME SETTING”



Basic parameter is 0.01s per unit.

Ex: If the setting parameter is “35”, so  $35 \times 0.01\text{s} = 0.35$  second

0.35s will be the needle injecting time.

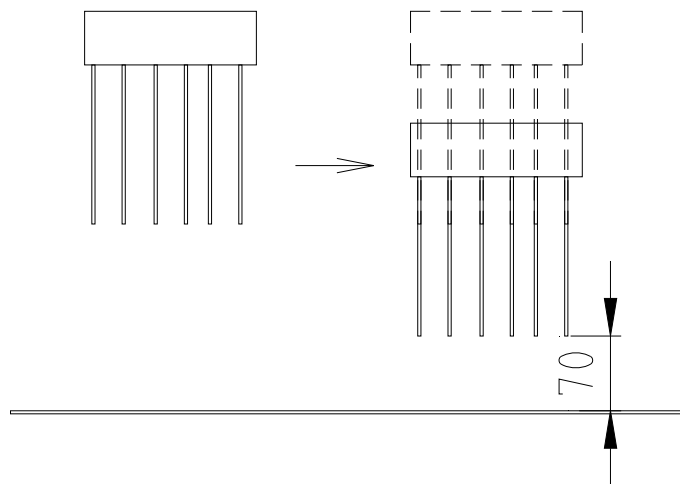
(6) 、 Enter “INJECTING POSITION SETTING” (Min 65- Max 280)




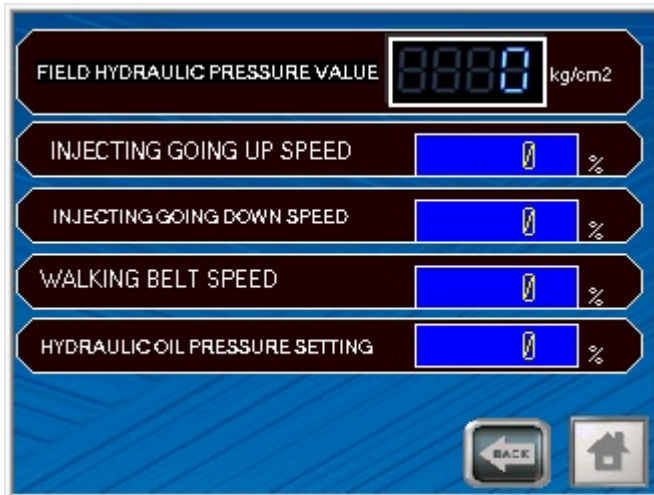
(65-280mm)

Minimum setting is 65mm, Maximum setting is 280mm.

Ex: If the “INJECTING POSITION SETTING” is 70mm, 70mm will be the distance from Belt to the needle injecting location.



(7) 、 Press “NEXT” icon  to go into “DATA INPUT” page 2.



(DATA INPUT PAGE 2)

(8) 、 Enter “INJECTING GOING UP SPEED” (Min 40- Max 100)



(9) 、 Enter “INJECTING GOING DOWN SPEED” (Min 40- Max 100)



(10) 、 Enter “WALKING BELT SPEED” (Min 30- Max 62)



(11) 、 Enter “HYDRAULIC OIL PRESSURE SETTING” (Min 10- Max 100)



Note: When Hydraulic oil pressure is getting strong, the **1. Injecting speed**, and **2. Belt walking speed** are getting faster.

(12) 、 Press “BACK” icon  to back to last page.

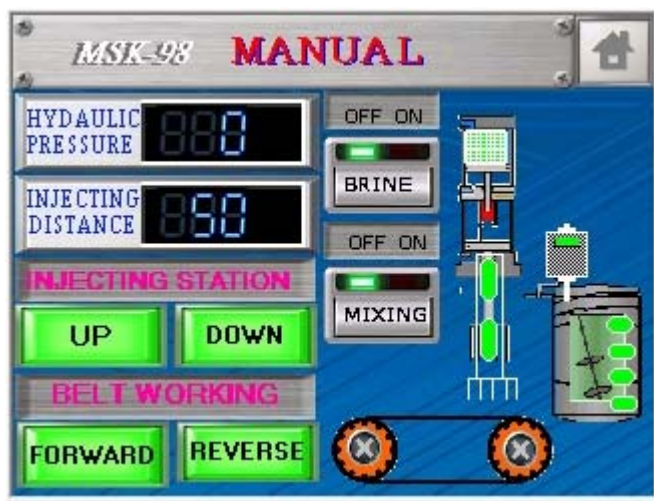
(13) 、 Press “HOME” icon  to back to “Main operation page”.

#### 4. Manual mode:

(1) 、 Press the “MANUAL” icon  to go into “MANUAL OPERATION PAGE”




(MAIN OPERATION PAGE)




(MANUAL OPERATION PAGE)


(2) 、 Injecting station “UP” icon 


(3) 、 Injecting station “DOWN” icon  ◦


(4) 、 Belt working “FORWARD” icon  ◦

(5) 、 Belt working “REVERSE” icon  ◦


(6) 、 Brine pump switch: press the “BRINE” icon  for ON/OFF.

(7) 、 Mixing motor switch: press the “MIXING” icon  for ON/OFF.

(8) 、 Hydraulic pressure (kg/cm<sup>2</sup>) 

(9) 、 Injecting distance (mm)   
(distance between belt to the needle injecting localtion)

Note:

The “BELT” doesn’t work   once the “INJECTING DISTANCE” is under “60mm”

## 5. Auto mode:

(1) 、 Press the “AUTO” icon  to go into “AUTO OPERATION PAGE”.



(MAIN OPERATION PAGE)





(AUTO OPERATION PAGE)

(2) 、 Make all the settings before pressing “START” bottom (green bottom) when the machine is working under “AUTO MODE”.



(Press the “DATA INPUT” icon at “MAIN OPERATION PAGE”, and make all the settings, ex. “INJECTING POSITION SETTING”, “INJECTING GOINH UP/DOWN SPEED”, “WALKING BELT SPEED”, “HYDRAULIC PRESSURE SETTING”.)

(3) 、 Auto mode running with 2 monitored data blank to be showed:



1 、 Hydraulic pressure (kg/cm<sup>2</sup>)



2 、 Injecting distance (mm)

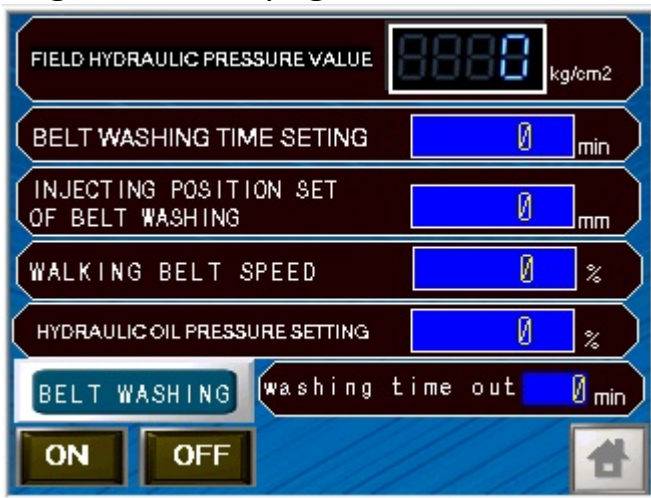
(distance between belt to the needle injecting localtion)

(4) 、 Press the “STOP BOTTOM”(red bottom) for stop machine running while “AUTO MODE”.

## 7、Belt washing:



(1)、Press the “BELT WASH” icon at “MAIN OPERATION PAGE” to go into data page of “BELT WASH”.



(DATA PAGE OF BELT WASH)

(2)、Enter “BELT WASHING TIME SETING” (Min 2- Max 500)



2-500 MINUTE

(3)、Enter “INJECTING POSITION SET OF BELT WASHING” (Min 70-Max 275)



70-275mm

(4)、Enter “WALKING BELT SPEED” (Min 30-Max 55)




30%-55%

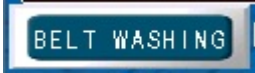
(5)、Enter “HYRAULICOIL PRESSURE SETING” (Min 10-Max 100)



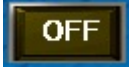
10-100%

(6)、Once finished all the above settings, please press “on” icon  for starting belt washing.

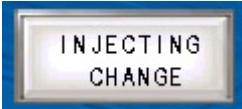
(7) 、 After successfully starting belt washing:

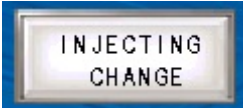
1 、 The “BELT WASHING” icon  will be blinking with red light.

2 、 Belt washing time countdown icon 

(8) 、 Press the “OFF” icon  to stop belt washing when the washing time is not completed.


8 、 Injecting change(needle change):

(1) 、 Press the “INJECTING CHANGE” icon  when machine is not running.

Once the “INJECTING CHANGE” icon  is blinking with red light, the needle will be going down to the end. Change or replace the needle when needle going down to the end.

(2) 、 Press the “INJECTING CHANGE” icon  again once finished needle change.

9、Signal input/output PLC:

(1)、Press the “HOME” icon  to back to “MAIN OPERATION PAGE” if not at “MAIN OPERATION PAGE”.



(MAIN OPERATION PAGE)

(2)、Press the “SIGNAL INPUT” icon  to view the PLC signal input data.



(SIGNAL INPUT -1)



(SIGNAL INPUT-2)



(SIGNAL INPUT -3)



(SIGNAL INPUT -4)

Note: The icons will be on with red light when the signals input PLC.



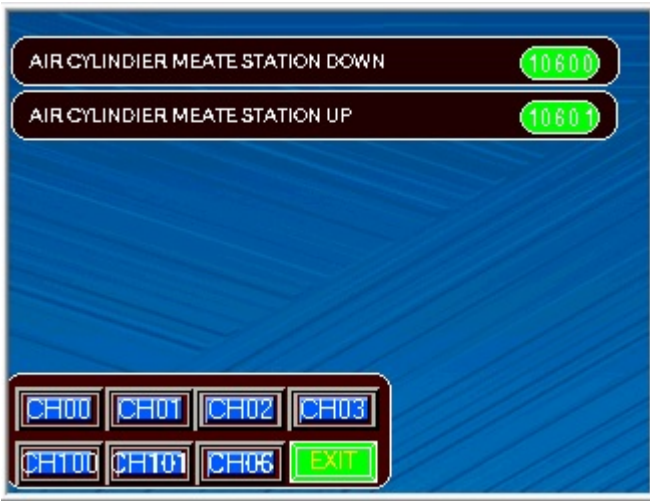
(3) 、 Press the “SINGAL OUTPUT” icon to view the PLC output signal data.



(SIGNAL OUTPUT -1)




(SIGNAL OUTPUT -2)



(SIGNAL OUTPUT -3)

Note: The icons will be on with red light when the PLC output the signals.

10、Fault history:

Press the “FAULT HISTORY” icon  to check fault record.



(FAULT HISTORY)

## 11 、 Fault / Failure messages:

(1) 、 If the machine does not work with any failure message showing on the bottom of screen, please fix it accordingly then press the “RESET” bottom(yellow bottom) to dissolve the safety protect lock to enable the machine running.


### (2) 、 Failure messages list:

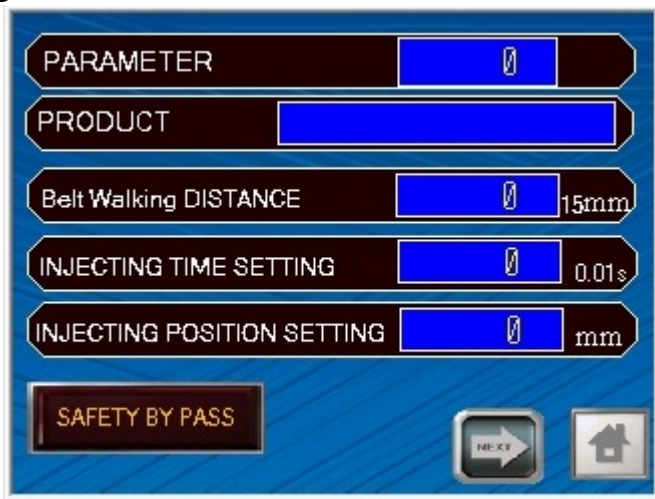
1. RECTILINEAR DISPLACEMENT TRANSDUCER FAILURE
2. WALKING BELT RELEASED
3. PRESSURE GAUGE FAILURE
4. HYDRAULIC FAN FUSE FAILURE
5. POWER PHASE FAILURE
6. EMERGENCY STOP
7. STOP
8. RIGHT FRONT SAFETY DOOR OPENED
9. INJECTING MOVE ABNORMAL
10. FRONT SAFETY DOOR SENSOR
11. ELECTRIC BOX FRONT SAFETY DOOR OPENED
12. REAL SAFETY DOOR OPENED
13. ELECTRIC REAL SAFETY DOOR OPENED
14. FRONT UPPER SAFETY DOOR OPENED
15. REAR UPPER SAFETY DOOR OPENED
16. RIGHT FRONT SAFETY DOOR OPENED
17. RIGHT REAR SAFETY DOOR OPENED
18. BRINE MOTOR OVERLOAD
19. HYDRAULIC MOTOR OVERLOAD
20. MIXING MOTOR OVERLOAD
21. Hydraulic rotary cylinder count abnormal
22. FRONT MIDDLE RIGHT DOOR OPENED
23. REAR MIDDLE LEFT DOOR OPENED
24. INJECTING STATION OUT OF UP LIMIT
25. INJECTING STATION OUT OF DOWN LIMIT



Note:

1、When the failure messages happened with “INJECTING STATION OUT OF UP LIMIT” or “INJECTING STATION OUT OF DOWN LIMIT”, please back to “MAIN

OPERATION PAGE” and press the “DATA INPUT” icon  to go into “DATA INPUT” page.



(DATA INPUT PAGE)

2、Press the “SAFETY BY PASS” icon



and enter the password “1234” at the first time enter.





(SAFETY BY PASS- ENTER PASSWORD PAGE)



(SAFETY BY PASS PAGE)

3、 If the failure message is “INJECTING STATION OUT OF UP LIMIT”, please press


the “LIMIT SENSOR OF TOP PROTECT ON” icon  to dissolve the safety proect lock, the icon “LIMIT SENSOR OF TOP PROTECT ON” will become “LIMIT SENSOR OF TOP PROTECT OFF” with blinking red lights, and press the  back to “MAIN OPERATION PAGE”, press the “RESET” bottom(yellow bottom) to dismiss the failure message to allow the machine working again.


4、 Once the failure message happened again with “INJECTING STATION OUT OF UP LIMIT” :

(1)、 Lower down the parameter “INJECTING POSITION SETTING”, “INJECTING GOING UP/DOWN SPEED” and “HYDRAULIC OIL PRESSURE SETTING”.

(2)、 It is normal if injecting station out of up limit happened once or twice during running, if it keeps happening often after adjusting parameter, please contact the official technician and request a formal inspection.

5、If the failure message is “INJECTING STATION OUT OF DOWN LIMIT”, please

press the “LIMIT SENSOR OF DOWN PROTECT ON” icon  to dissolve the safety protect lock, the icon “LIMIT SENSOR OF DOWN PROTECT ON” will become “LIMIT SENSOR OF DOWN PROTECT OFF” with blinking red

lights, and press the  back to “MAIN OPERATION PAGE”, press the “RESET” bottom(yellow bottom) to dismiss the failure message to allow the machine working again.

6、Once the failure message happened again with “INJECTING STATION OUT OF DOWN LIMIT” :

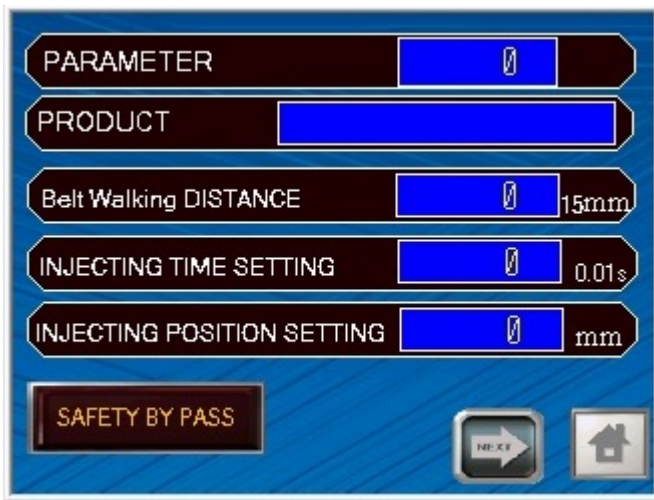
(1)、Lower down the parameter “INJECTING POSITION SETTING”, “INJECTING GOING UP/DOWN SPEED” and “HYDRAULIC OIL PRESSURE SETTING”.

(2)、It is normal if injecting station out of down limit happened once or twice during running, if it keeps happening often after adjusting parameter, please contact the official technician and request a formal inspection.

7、If the machine door is required to open for inspection, please compulsorily dissolve the safety protect lock (SAFETY BY PASS).

Step of “compulsorily dissolve the safety protect lock”:

(1) Press the “DATA INPUT” icon  at the main operation page.



(DATA INPUT PAGE)

(2) Press "SAFETY BY PASS" for the first time enter.



, enter the password "1234"



(SAFETY BY PASS- PASSWORD PAGE)

(3) Press "DOOR SAFETY ON"



to unlock the door safety lock, the "DOOR SAFETY ON" becomes "DOOR SAFETY OFF".

When the machine is working under "DOOR SAFETY OFF", the machine will keep working without safety protect lock no matter if any door is opened. (Normally machine should work under "DOOR SAFETY ON", meaning machine will not work when one of any door is opened.)

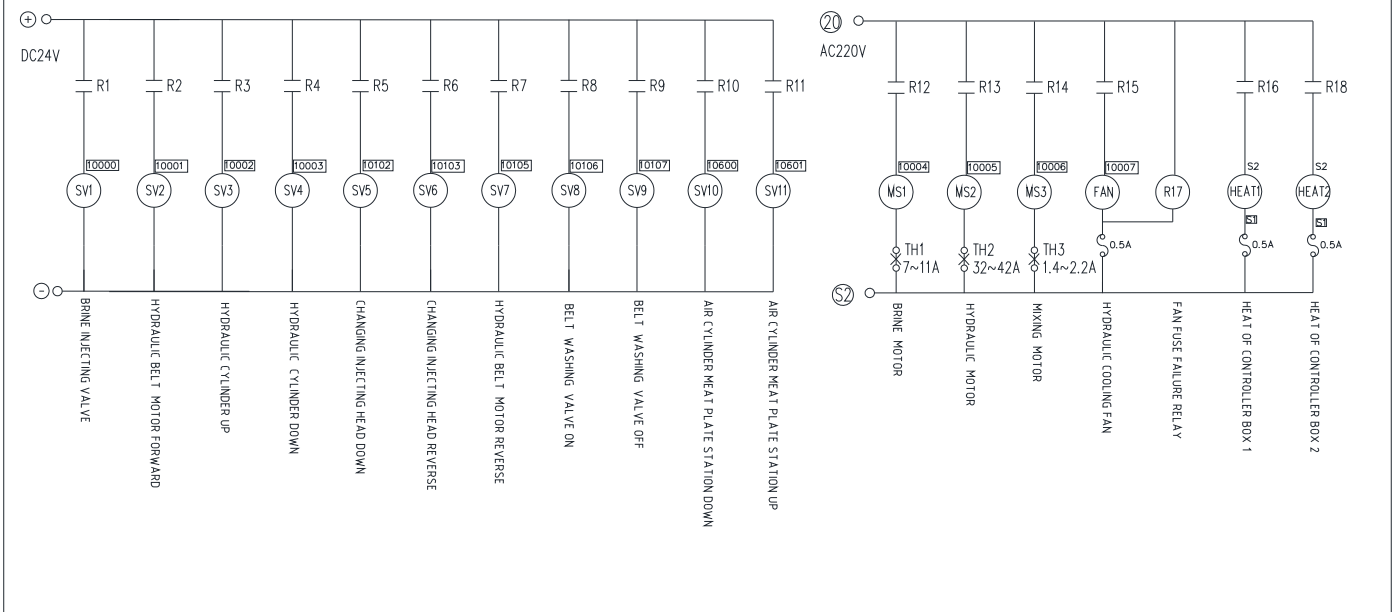
(If successfully unlock the door safety protect lock, the blank of DOOR SAFETY OFF will be blinking with red light.)



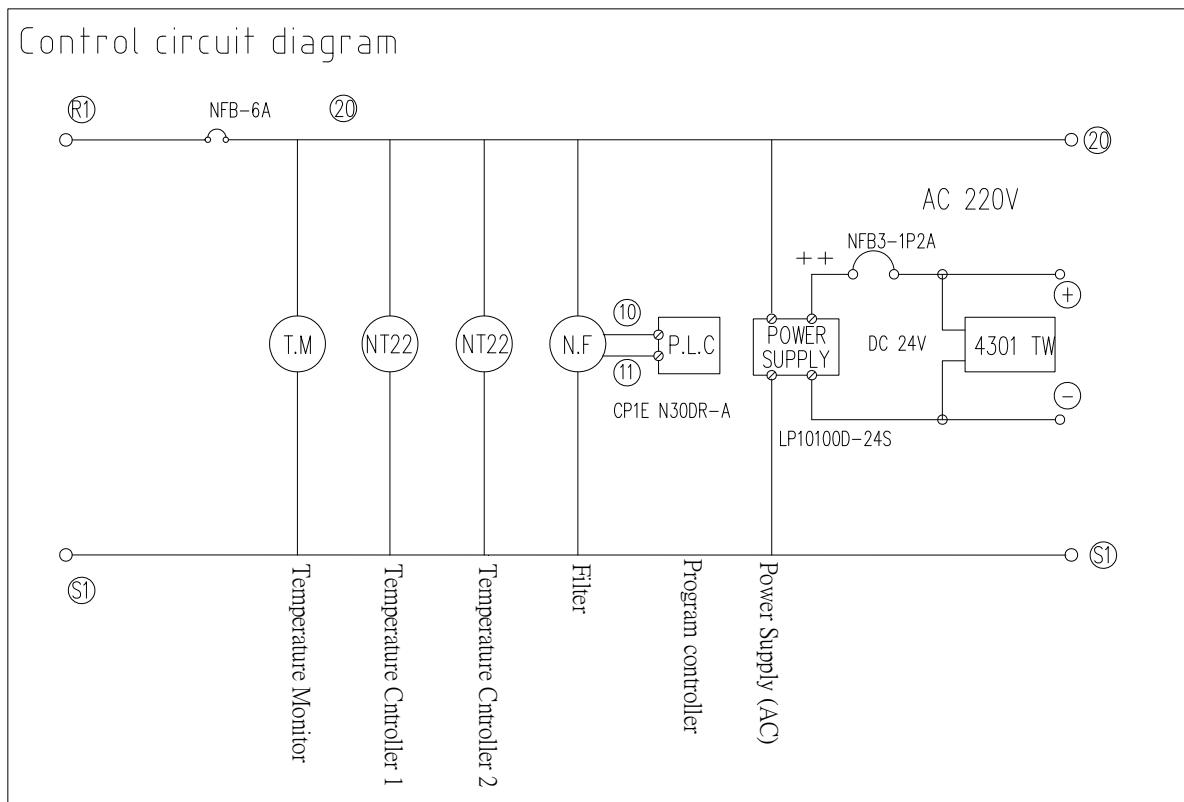
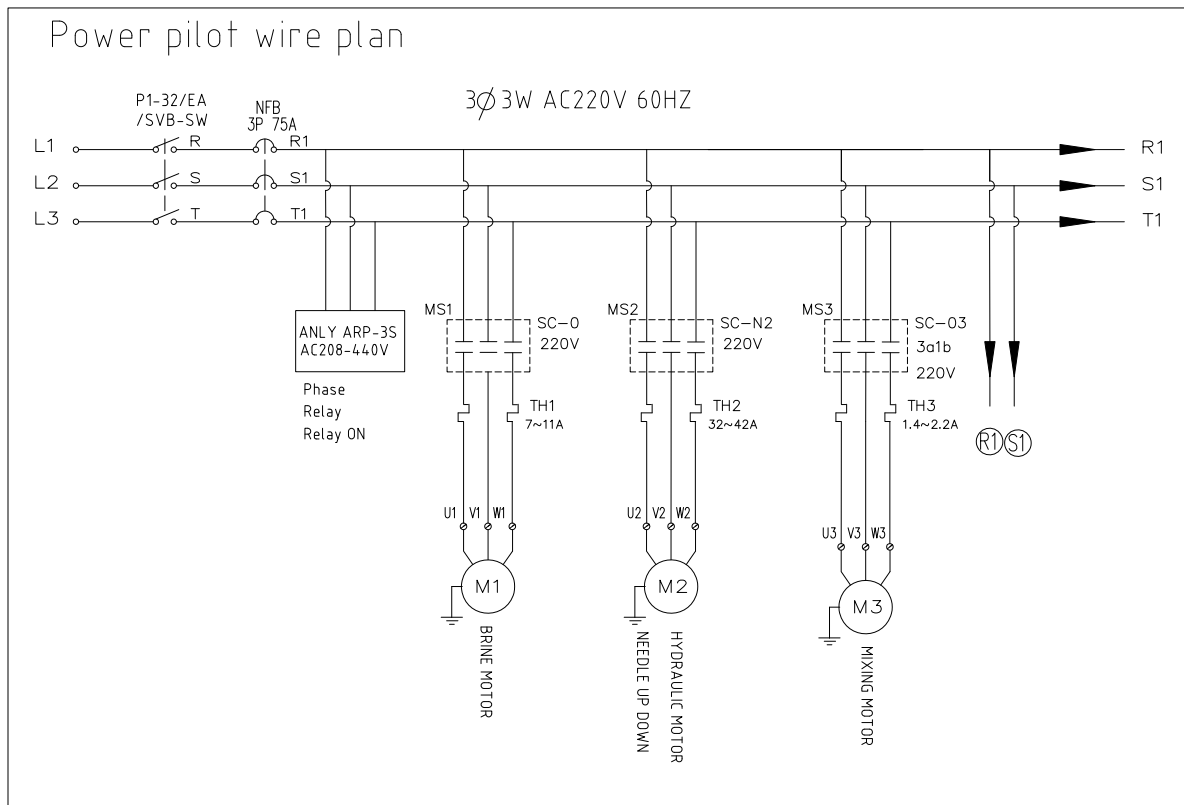
(SAFETY BY PASS PAGE)

## 8. Electric diagram and introduction

Output wiring diagram

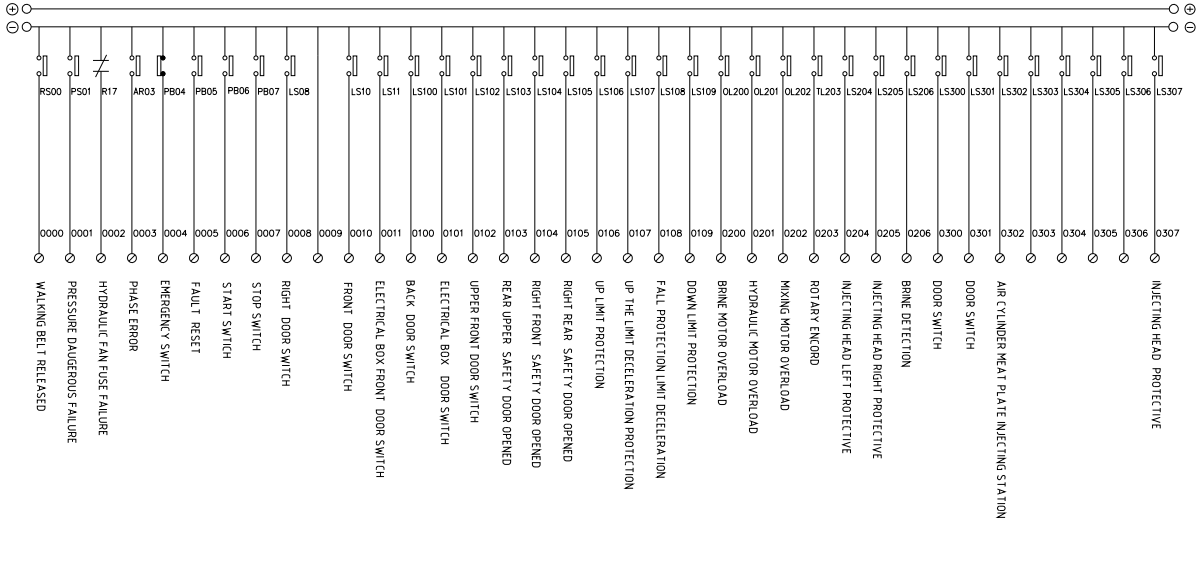


# 8. Electric diagram and introduction



# Input wiring diagram

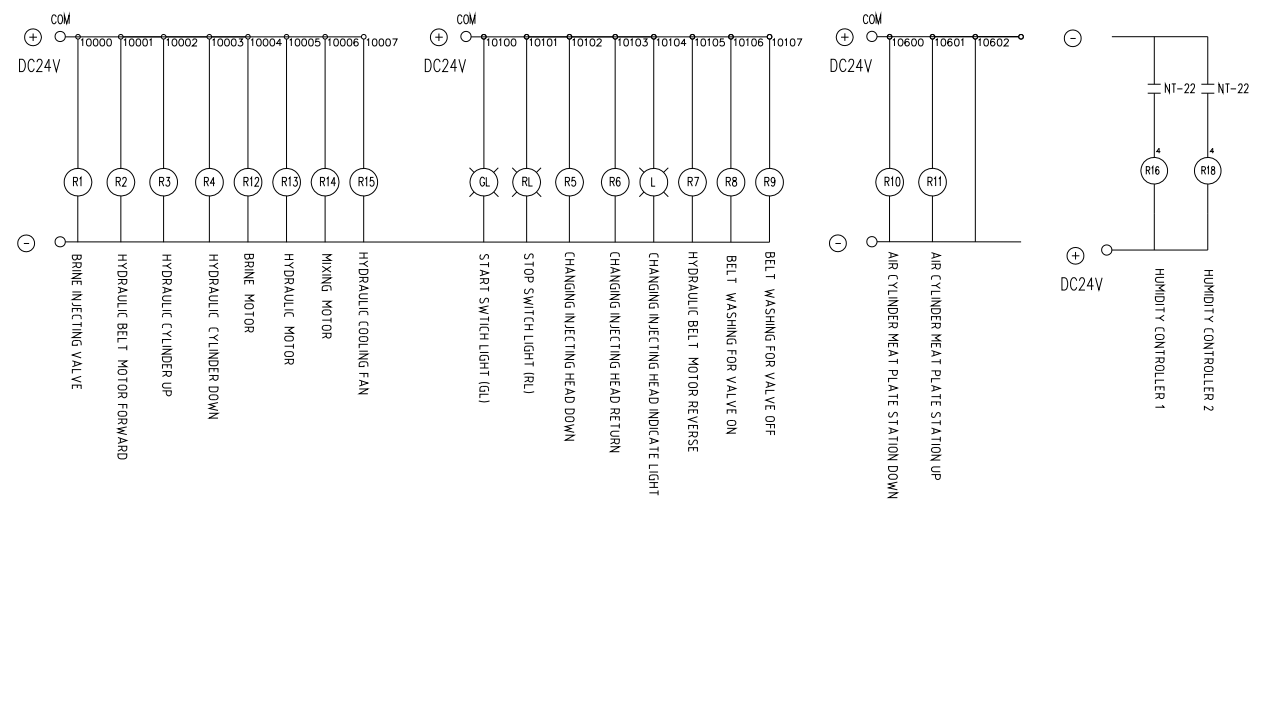
PLC CP1H-XA40DR-A



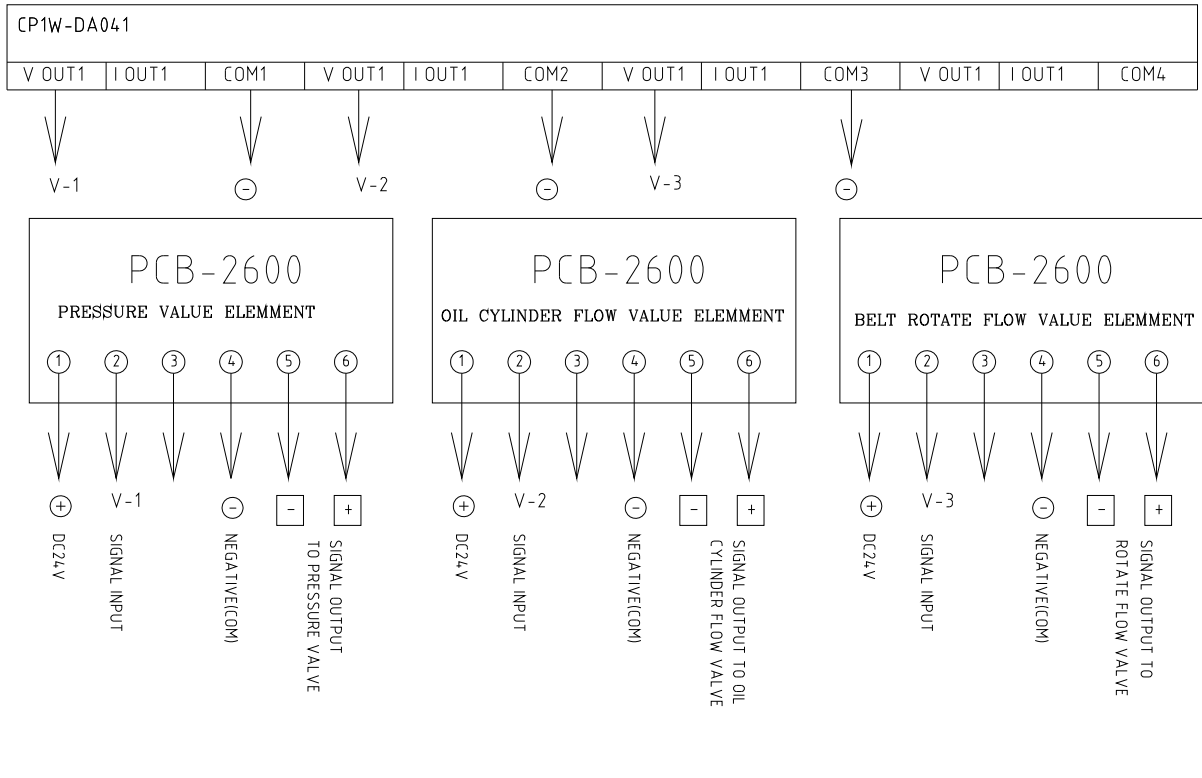
# Output wiring diagram

PLC CP1H-XA40DR-A

8ER

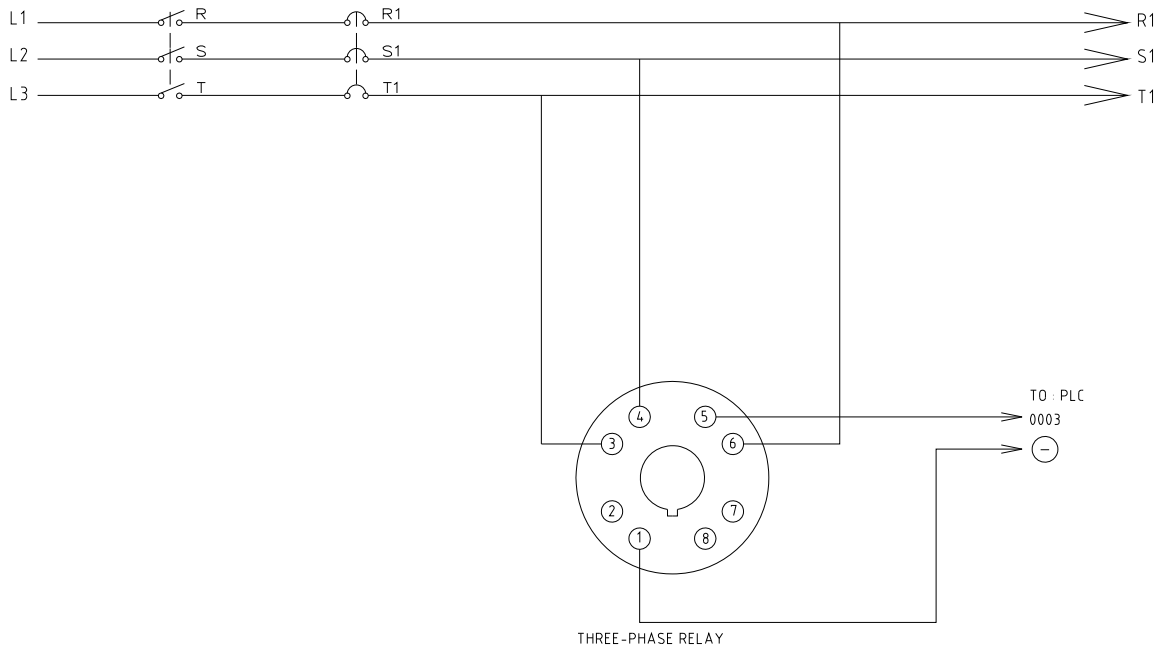


# Analogy output wire plan



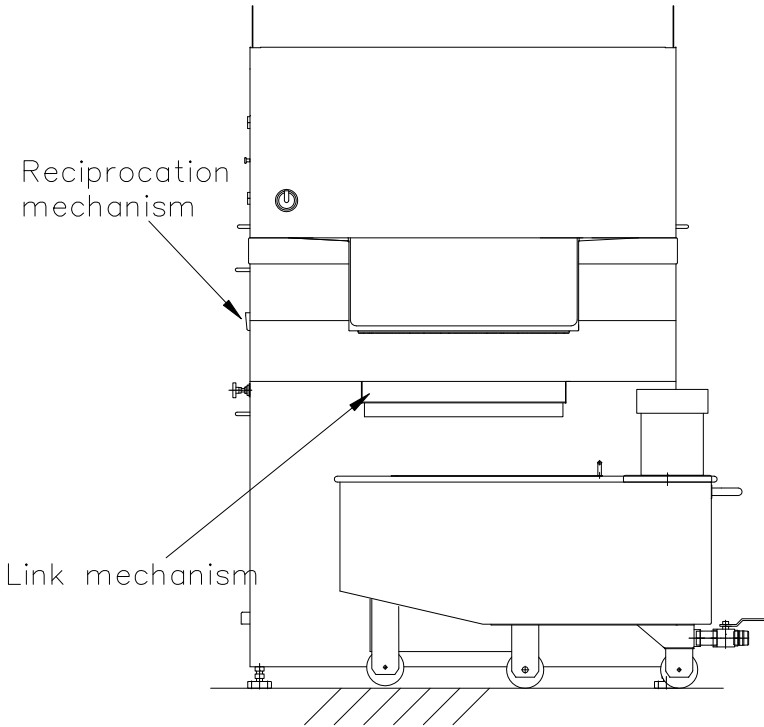
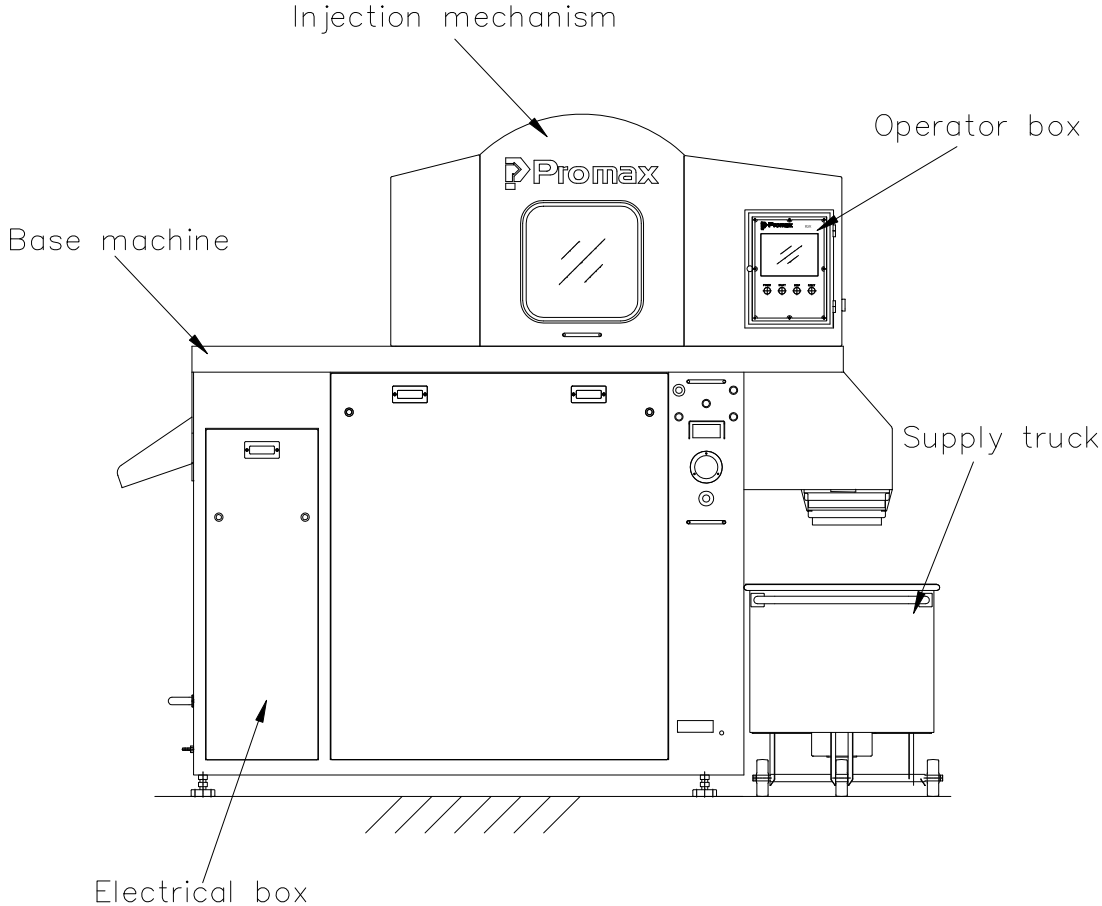
# Force dynamics

3 3W AC220V 60HZ

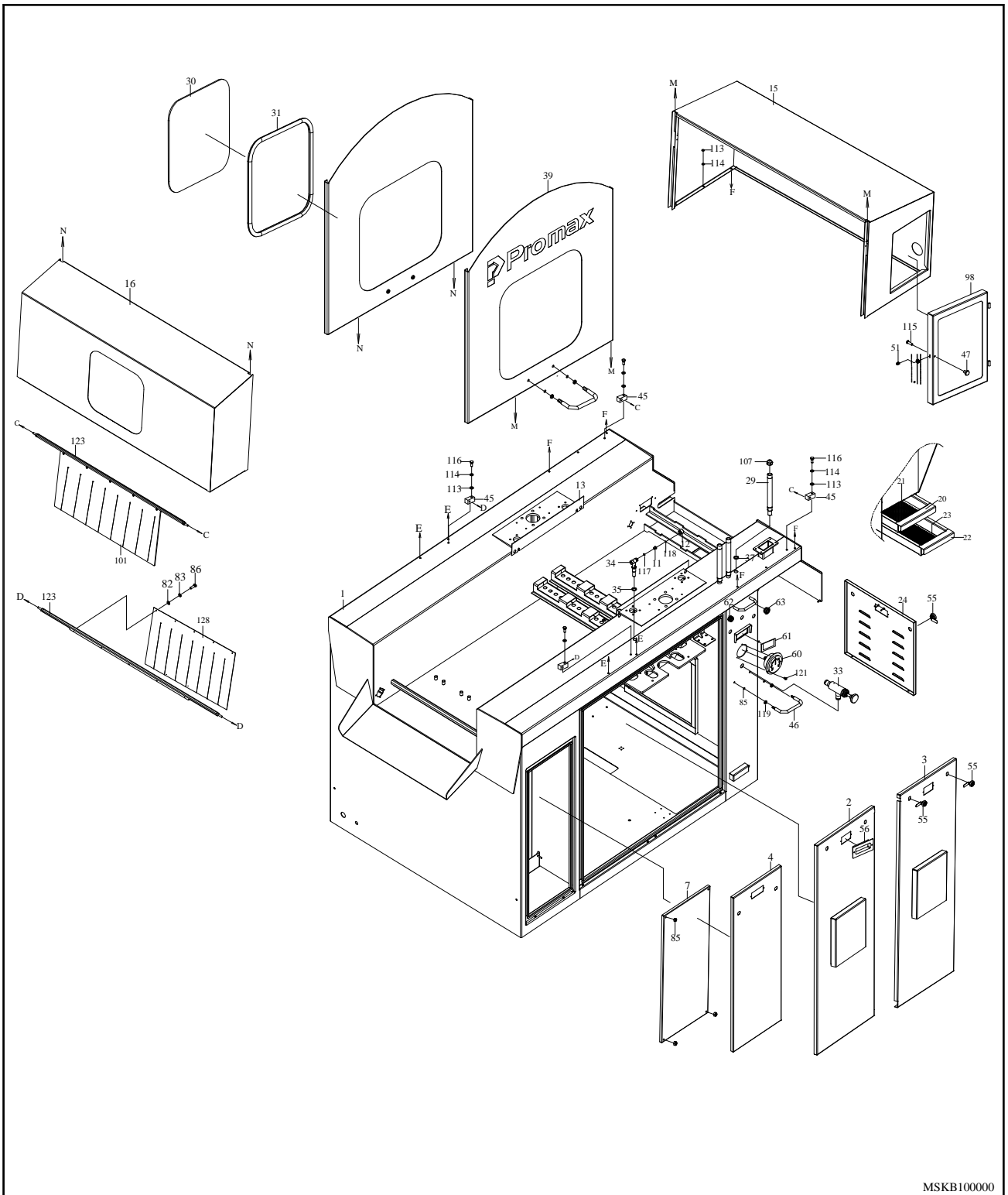




# 9. Fabrication

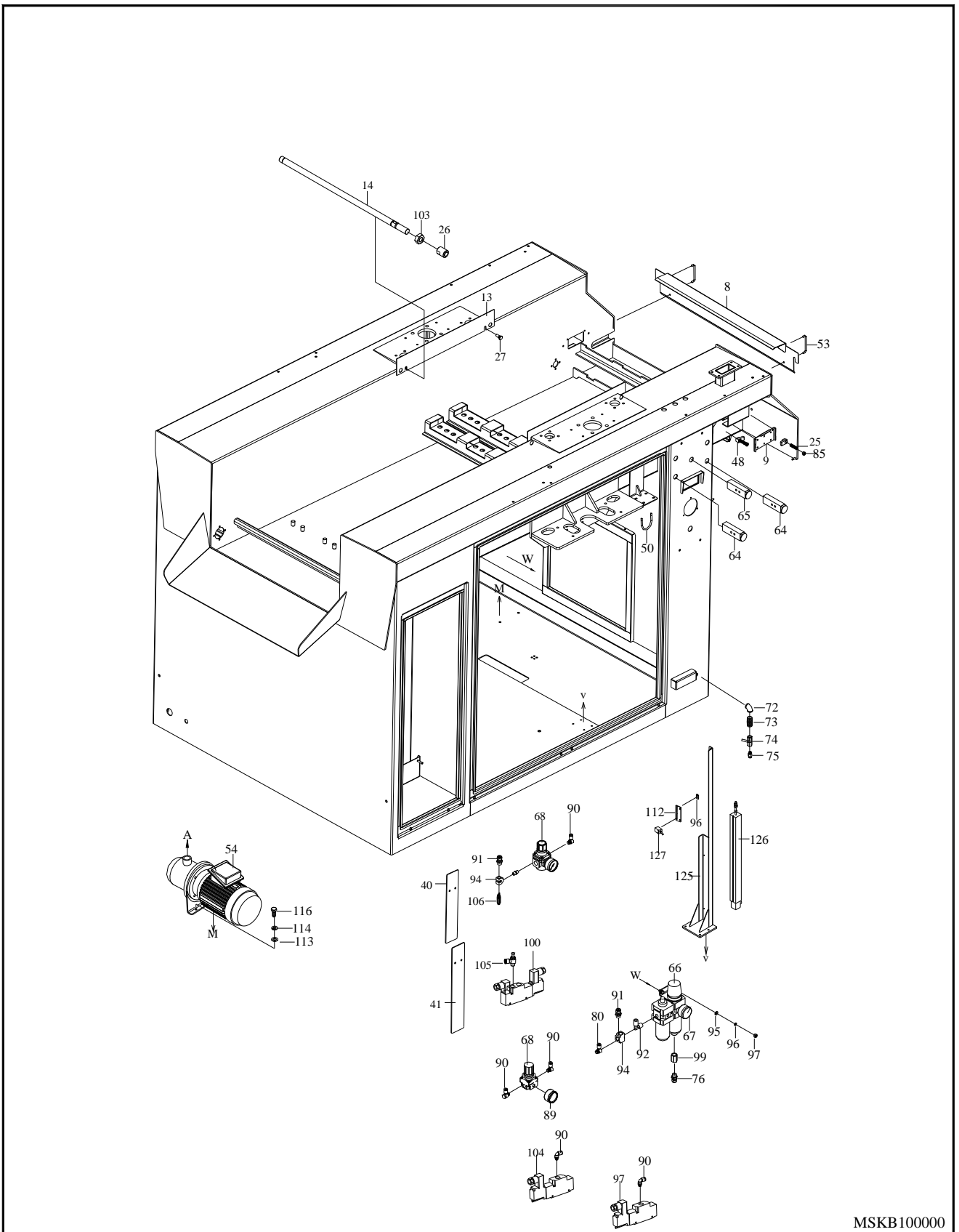


# 9.1 BASE MACHINE



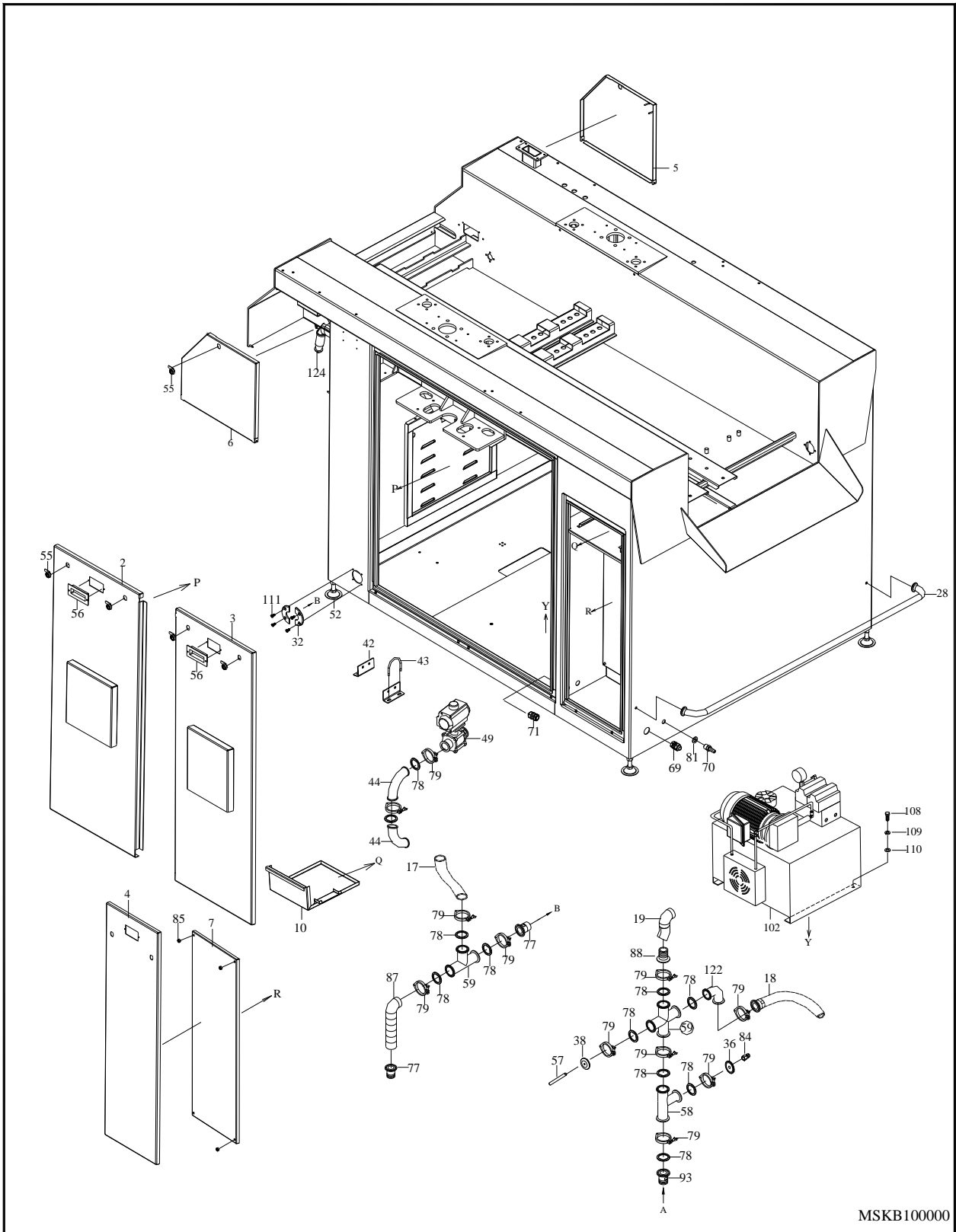
MSKB10000

# 9.1 BASE MACHINE



MSKB100000

# 9.1 BASE MACHINE



MSKB100000

| NO. | PART NO.   | DESCRIPTION          | QTY |  |
|-----|------------|----------------------|-----|--|
| 1   | 137020A1   | Frame                | 1   |  |
| 2   | MSKA107000 | Front door(L)        | 2   |  |
| 3   | MSKA108000 | Front door(R)        | 2   |  |
| 4   | MSKA109000 | Electrical box door  | 2   |  |
| 5   | MSKA113000 | Front right door     | 1   |  |
| 6   | MSKA114000 | Front back door      | 1   |  |
| 7   | MSKB822000 | Panel                | 2   |  |
| 8   | MSK9119000 | Front guide plate    | 1   |  |
| 9   | MSK9121000 | Cover plate          | 2   |  |
| 10  | MSKA122000 | Oil collect plate    | 1   |  |
| 11  | MSK4142000 | O-Ring holder        | 2   |  |
| 12  | MSK4143000 | Cover                | 2   |  |
| 13  | MSKA145001 | Protection plate     | 2   |  |
| 14  | MSK9146000 | Shaft                | 2   |  |
| 15  | 137020A2   | Cover door           | 1   |  |
| 16  | 137020A3   | Upper left cover     | 1   |  |
| 17  | MSKA176000 | High pressure 1-1/2" | 1   |  |
| 18  | MSKA174000 | High pressure 1-1/2" | 1   |  |
| 19  | MSKA173000 | High pressure 1-1/2" | 1   |  |
| 20  | MSK8102000 | Drawer               | 1   |  |
| 21  | MSK8103000 | Sift net             | 1   |  |
| 22  | MSK8104000 | Drawer               | 1   |  |
| 23  | MSK8105000 | Sift net             | 1   |  |
| 24  | MSK8106000 | Side door            | 1   |  |
| 25  | MSK4219000 | Spring               | 4   |  |
| 26  | MSK8147000 | Nut                  | 2   |  |
| 27  | MSK8148000 | Screw                | 6   |  |
| 28  | MSKA154000 | Stopper rod          | 1   |  |
| 29  | MSK8163000 | Air tube mount       | 3   |  |
| 30  | MSK1119000 | Window               | 3   |  |
| 31  | MSK4115000 | Gasket               | 3   |  |
| 32  | MSK4118001 | Plate                | 2   |  |
| 33  | MSK4130003 | Valve                | 1   |  |
| 34  | MSK4141000 | Clean needle set     | 1   |  |
| 35  | MSK4144000 | Washer               | 3   |  |

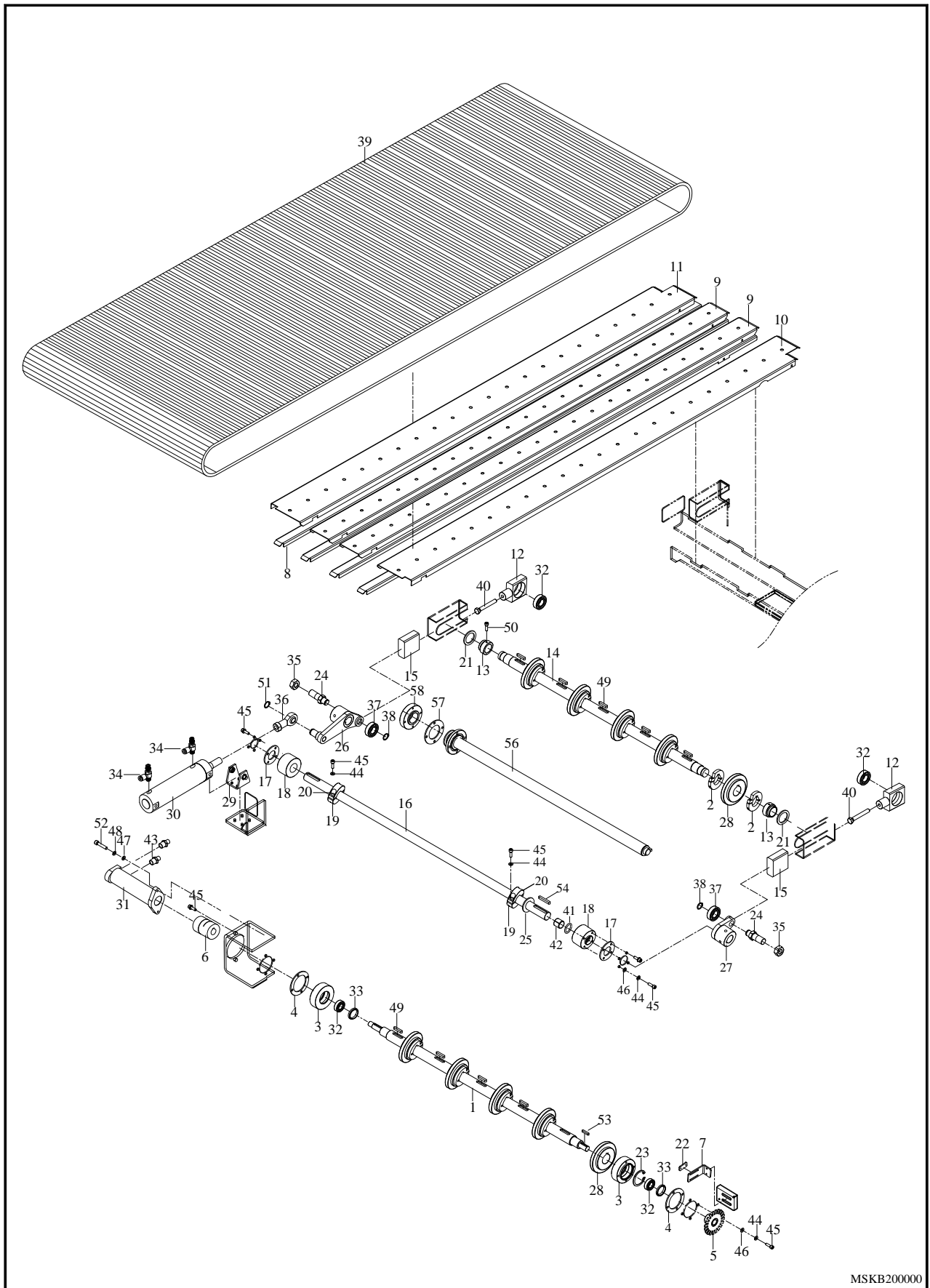
| NO. | PART NO.   | DESCRIPTION                                      | QTY |  |
|-----|------------|--|-----|--|
| 36  | MSK4151001 | Screw fitting                                    | 1   |  |
| 37  | MSK4168000 | Washer   | 3   |  |
| 38  | MSK4169000 | Sensor mount                                     | 1   |  |
| 39  | 13702010   | Upper cover door                                 | 2   |  |
| 40  | MSKB920000 | Valve fixed plate                                | 1   |  |
| 41  | MSKB930000 | Valve fixed plate                                | 1   |  |
| 42  | MSKA178001 | Tube fixed plate                                 | 2   |  |
| 43  | 2704984    | Screw U type 5/16"x1-1/2"                        | 2   |  |
| 44  | 2909227    | Clamp tee IDF-021 1-1/2"                         | 3   |  |
| 45  | MSK2164001 | Water proof plate                                | 4   |  |
| 46  | MSK2606000 | Handle   | 4   |  |
| 47  | MSK2617000 | Handle   | 1   |  |
| 48  | MSK2618000 | Press block                                      | 4   |  |
| 49  | 2909248    | Valve 2-WAY 1-1/2"                               | 1   |  |
| 50  | 27049834   | Screw U type 5/16"x1"                            | 2   |  |
| 51  | 2701809    | Setting ball M8x1.25                             | 1   |  |
| 52  | 27M82537   | Base leg   | 4   |  |
| 53  | 2740232    | Handle   | 2   |  |
| 54  | 2858010    | Switch,motor centrifugal MHI804-R 220V/380V-60HZ | 1   |  |
| 55  | 2883349    | Arm C-408K Key                                   | 16  |  |
| 56  | 2883142    | Arm K-508 Key                                    | 5   |  |
| 57  | 2856234    | Temperature sensor                               | 1   |  |
| 58  | 2909190    | Clamp tee IDF-022 1-1/2"                         | 2   |  |
| 59  | 2909191    | Clamp tee IDF-023 1-1/2"                         | 1   |  |
| 60  | 2910577    | Pressure gauge                                   | 1   |  |
| 61  | 2856229    | Temperature display TC21-ND-PT                   | 1   |  |
| 62  | 2933094    | Valve Mechanical MVMB-220-3PP-22                 | 1   |  |
| 63  | 2870205    | Switch,illuminated mushroom AVLW43311-R 24V      | 1   |  |
| 64  | 2933093    | Valve Mechanical MVMB-220-4TB-22                 | 2   |  |
| 65  | 2933097    | Valve Mechanical MVMB-220-3TB-22                 | 1   |  |
| 66  | 2910108    | Regulator air main MACP 300-10A-D                | 1   |  |
| 67  | 2910550    | Pressure gauge 1/8" QPG40-11(PSI&KGF)            | 1   |  |
| 68  | 29100050   | Regulator air SMC AR20-02H                       | 2   |  |
| 69  | 2861028    | Straight connector MG-25A-18G                    | 3   |  |
| 70  | MSK4901000 | Fitting  | 1   |  |

| NO. | PART NO.   | DESCRIPTION  | QTY |  |
|-----|------------|--|-----|--|
| 71  | 2861021    | Straight connector MG-20A-14B                          | 2   |  |
| 72  | 2740006Z   | Fitting 1/4"   | 1   |  |
| 73  | 29092180   | Nipple 1/4"x30mm                                       | 1   |  |
| 74  | 290932770  | Fitting 1/4"   | 1   |  |
| 75  | 29091742   | Fitting 1/4"x5/16N                                     | 1   |  |
| 76  | 2909333    | Fitting tube JPC802                                    | 1   |  |
| 77  | 2909207    | Adapter with threaded on the end IDF-016 1-1/2"x1-1/4" | 1   |  |
| 78  | 2909188    | Gasket IDF-017 1-1/2"                                  | 9   |  |
| 79  | 2909189    | Heavy duty single pin ciamp IDF-015 1-1/2"             | 9   |  |
| 80  | 29090221   | Fitting tube P-74 3/8"                                 | 1   |  |
| 81  | 2705155    | Washer, flat M14                                       | 1   |  |
| 82  | 2705150    | Washer flat M5   | 10  |  |
| 83  | 2705303    | Washer split lock M5                                   | 10  |  |
| 84  | 29091742   | Fitting XL-802   | 1   |  |
| 85  | 2707203    | Nut, hex hd M8 (S)                                     | 16  |  |
| 86  | 27000362   | Screw hex hd M5x12                                     | 10  |  |
| 87  | MSKA175000 | High pressure 1-1/2"                                   | 1   |  |
| 88  | 2909207    | Adapter with threaded on the end IDF-016 1-1/2"x1-1/2" | 1   |  |
| 89  | 2913502    | Pressure switch GP46-P10-01L5-X30 DC24V                | 1   |  |
| 90  | 29090312   | Fitting SPL802   | 4   |  |
| 91  | 29081003   | Fitting SPC10-03                                       | 2   |  |
| 92  | 2909109    | Fitting copper P13-1                                   | 1   |  |
| 93  | 2909187    | Adapter with threaded on the end IDF-016 1-1/2"x1"     | 1   |  |
| 94  | 2909190    | Fitting AP87-1 3/8"                                    | 1   |  |
| 95  | 2705151    | Washer flat M6   | 1   |  |
| 96  | CV1K266000 | Switch sensor lock plate                               | 8   |  |
| 97  | 2911231    | Valve, MVSC220-4E2R-DC24V-L                            | 1   |  |
| 98  | MSK2810001 | Stopper shaft  | 1   |  |
| 99  | 2909172    | Fitting copper B-23 1/4"x1/4"                          | 1   |  |
| 100 | 2911230    | Valve, MVSC220-4E2-DC24V-L                             | 1   |  |
| 101 | MSKA121000 | Splash guard   | 1   |  |
| 102 | MSKA901001 | Oil pressure unit                                      | 1   |  |
| 103 | 27070128   | Nut M24x3  | 2   |  |
| 104 | 2911229    | Valve, MVSC220-3E1-NC-DC24V-L                          | 1   |  |

| NO. | PART NO.   | DESCRIPTION                                      | QTY |  |
|-----|------------|--|-----|--|
| 105 | 2908015    | Fitting JSC602                                   | 2   |  |
| 106 | 2914058    | Valve,Safety SV-02                               | 1   |  |
| 107 | 2861037    | Straight connector MG-16A-10G                    | 3   |  |
| 108 | 2700459    | Screw hex hd M12x40                              | 4   |  |
| 109 | 2705305    | Washer split lock M12                            | 4   |  |
| 110 | 2705124    | Washer flat M12                                  | 4   |  |
| 111 | 2702216    | Screw flat philip M6x8                           | 4   |  |
| 112 | MSKA823001 | Sensor fixed plate                               | 1   |  |
| 113 | 2705301    | Washer, flat M8                                  | 12  |  |
| 114 | 2705331    | Washer split lock M8                             | 12  |  |
| 115 | 2701501    | Screw oval hd M6x12                              | 1   |  |
| 116 | 2701179    | Hex socket hd cap M8x35                          | 6   |  |
| 117 | 2740199    | O-ring P9  | 2   |  |
| 118 | 2740149    | O-ring P4  | 2   |  |
| 119 | MSK4607000 | Noose  | 4   |  |
| 121 | 2701503    | Screw oval hd M5x12                              | 3   |  |
| 122 | 2909222    | Clamp tee IDF-020 1-1/2"                         | 1   |  |
| 123 | MSKA117000 | Clamping ledge                                   | 2   |  |
| 124 | 2844010    | Surface mounting sockets 3P+E/16A/480V LEG056359 | 1   |  |
|     | 2844011    | Straight plugs 3P+E/16A/480V LEG055359           | 1   |  |
| 125 | MSKA822001 | Sensor fixed plate                               | 1   |  |
| 126 | 2825007    | Resistor measure GEFran LT-M-375-S               | 1   |  |
| 127 | 2851005    | Switch proximity omron tl-q5mc1                  | 8   |  |
| 128 | MSKA120000 | Splash guard                                     | 1   |  |
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## 9.2 LINK MECHANISM

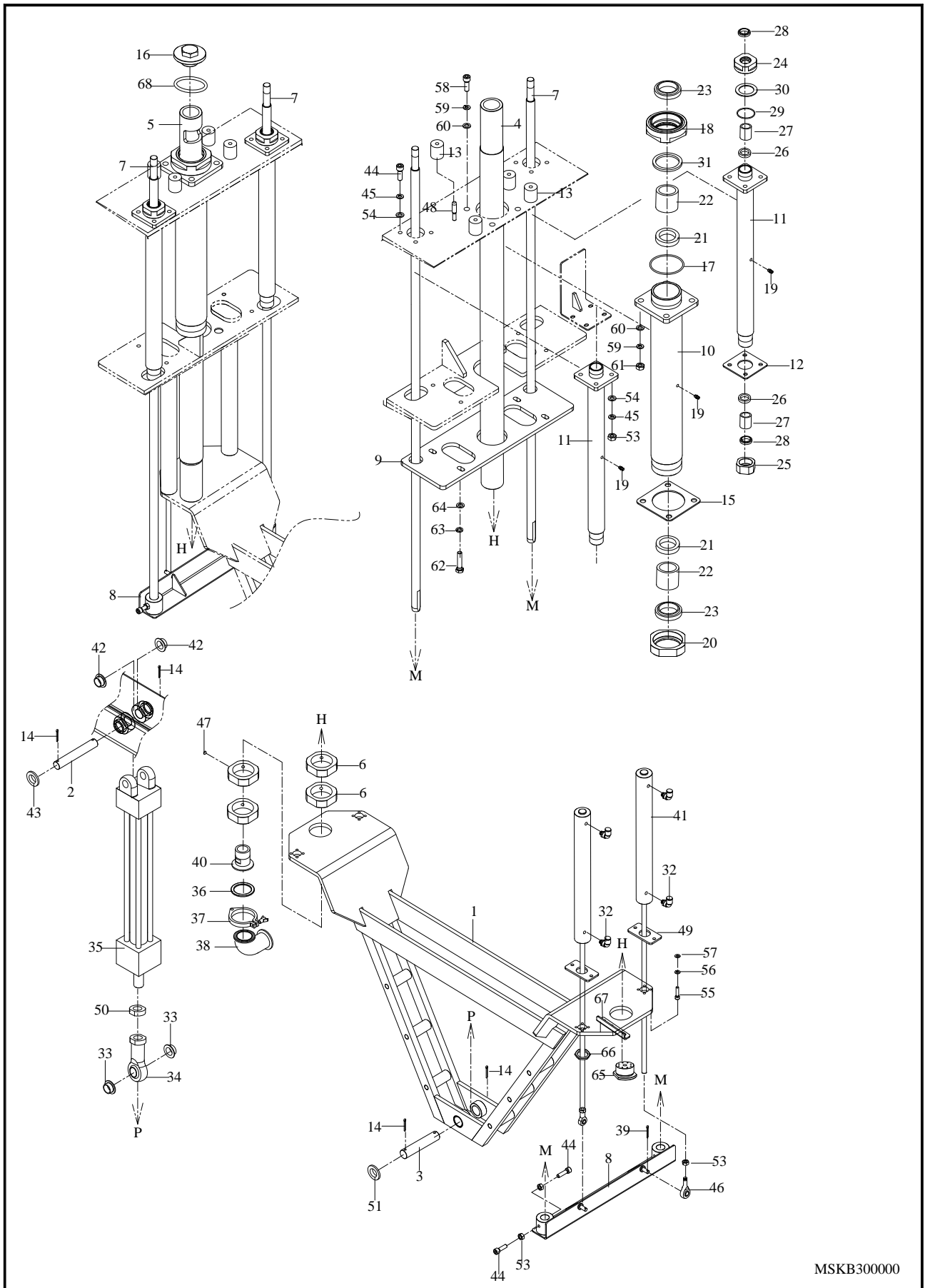


MSKB200000

| NO. | PART NO.   | DESCRIPTION               | QTY |  |
|-----|------------|---------------------------|-----|--|
| 1   | MSKA201000 | Driven shaft              | 1   |  |
| 2   | MSK9202000 | Washer                    | 20  |  |
| 3   | MSK9203000 | Bearing bracket           | 2   |  |
| 4   | MSK9204000 | Washer                    | 2   |  |
| 5   | MSK9205000 | Sensor plate              | 1   |  |
| 6   | MSKA227000 | Couler                    | 1   |  |
| 7   | MSK9207000 | Sensor plate              | 1   |  |
| 8   | MSKA211000 | Bottom guiding plate      | 4   |  |
| 9   | MSKA212000 | Top guiding plate         | 2   |  |
| 10  | MSKA213000 | Top guiding plate-F       | 1   |  |
| 11  | MSKA214000 | Top guiding plate- B      | 1   |  |
| 12  | MSK9213000 | Bearing bracket           | 2   |  |
| 13  | MSK9214000 | Bushing                   | 2   |  |
| 14  | MSK9215000 | Shaft                     | 1   |  |
| 15  | MSK9216000 | Belt adjust slide block   | 2   |  |
| 16  | MSK9217000 | Adjust arm shaft          | 1   |  |
| 17  | MSK9218000 | Washer                    | 2   |  |
| 18  | MSK9219000 | Bearing bracket           | 2   |  |
| 19  | MSK9220000 | Plate shaft stop          | 2   |  |
| 20  | MSK9221000 | Retaining ring            | 2   |  |
| 21  | MSK9222000 | Washer                    | 2   |  |
| 22  | MSK9223000 | Fixed plate               | 1   |  |
| 23  | 2706035    | Ring R47                  | 2   |  |
| 24  | MSK9225000 | Shaft                     | 2   |  |
| 25  | MSK9226000 | Washer                    | 2   |  |
| 26  | B80K233000 | Belt adjust arm           | 1   |  |
| 27  | BT80234000 | Belt adjust arm           | 1   |  |
| 28  | 27140311   | Gear 3-CNB-12T            | 10  |  |
| 29  | 2921201    | Cylinder plate            | 1   |  |
| 30  | 292018210  | Cylinder CDG1UA50-100-C73 | 1   |  |
| 31  | 2920827    | Oil motor                 | 1   |  |
| 32  | 27280454   | Bearing 6005ZZ            | 4   |  |
| 33  | 27400543   | Oil sealer                | 2   |  |
| 34  | 2908017    | Fitting tube JSC 802      | 2   |  |
| 35  | 27070126   | Nut M18x2                 | 2   |  |

| NO. | PART NO.   | DESCRIPTION                            | QTY  |  |
|-----|------------|--|------|--|
| 36  | 2728445    | Rod eye, PHS M18x1.5R                  | 1    |  |
| 37  | MSK4216000 | Bearing 6203ZZ                         | 2    |  |
| 38  | 2706031    | Ring S17                               | 2    |  |
| 39  | 2729025    | POM-CNB-RT-18%-W762mm                  | 4.74 |  |
| 40  | 270106942  | Hex hd screw M10x60                    | 2    |  |
| 41  | 27401972   | O-ring P25                             | 2    |  |
| 42  | 272832531  | Bearing oilless BM2525                 | 2    |  |
| 43  | 2909899    | Fitting 3/4"x1/2"                      | 2    |  |
| 44  | 2705302    | Split lock washer M6 (S)               | 18   |  |
| 45  | 2701152    | Hexagon socket head cap bolt M6x16 (S) | 18   |  |
| 46  | 2705151    | Washer, flat M6 (S)                    | 12   |  |
| 47  | 2705152    | Washer, flat M8 (S)                    | 2    |  |
| 48  | 2705301    | Split lock washer M8 (S)               | 2    |  |
| 49  | 2709215    | Key 8x7x32                             | 10   |  |
| 50  | 2701195    | Hexagon socket head cap bolt M6x10 (S) | 2    |  |
| 51  | 27060221   | Ring S18                               | 1    |  |
| 52  | 2701156    | Hexagon socket head cap bolt M8x20 (S) | 4    |  |
| 53  | 2709025    | Key 5x5x20                             | 2    |  |
| 54  | 2709202    | Key 8x7x40                             | 2    |  |
| 55  | 27283416   | Bearing oilless BM1410F22              | 1    |  |
| 56  | MSKA230000 | Tube                                   | 1    |  |
| 57  | MSKA231000 | Washer                                 | 1    |  |
| 58  | MSKA232000 | Fixed flange                           | 1    |  |
|     |            |  |      |  |
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# 9.3 RECIPROCATION MECHANISM

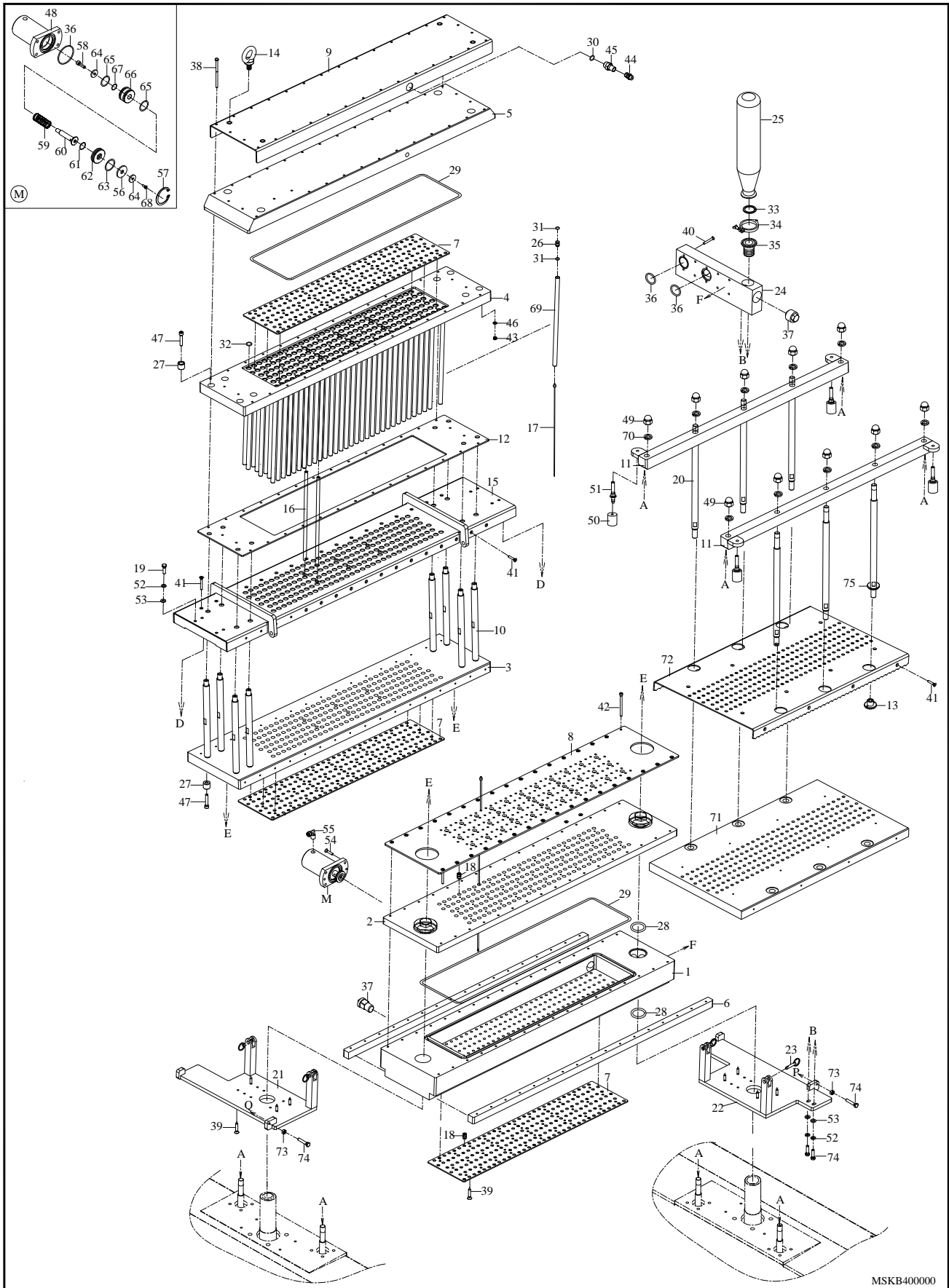


MSKB300000

| NO. | PART NO.   | DESCRIPTION                 | QTY |  |
|-----|------------|-----------------------------|-----|--|
| 1   | MSKA301001 | Strocke cross beam          | 1   |  |
| 2   | MSKA302000 | Shaft for cylinder          | 1   |  |
| 3   | MSKA303000 | Shaft                       | 1   |  |
| 4   | MSKA304000 | Towbar(front)               | 1   |  |
| 5   | MSKA305000 | Towbar(back)                | 1   |  |
| 6   | MSKA306000 | Bushing                     | 8   |  |
| 7   | MSKA307001 | Meat towbar shaft           | 4   |  |
| 8   | MSKB308000 | Link mount                  | 2   |  |
| 9   | MSKB309000 | Plate,shaft base            | 2   |  |
| 10  | MSK8313001 | Bushing                     | 2   |  |
| 11  | MSKA318001 | Bushing                     | 4   |  |
| 12  | MSKA311000 | Washer                      | 4   |  |
| 13  | MSKA320000 | Stopper                     | 8   |  |
| 14  | 27433228   | Pin                         | 4   |  |
| 15  | MSK9310000 | Washer                      | 2   |  |
| 16  | MSK8308000 | Colume pipe                 | 2   |  |
| 17  | 27401986   | O-ring G75                  | 2   |  |
| 18  | MSK8312000 | Nut                         | 2   |  |
| 19  | 2740140    | Nipple, grease 1/8T         | 6   |  |
| 20  | MSK8314000 | Bushing                     | 2   |  |
| 21  | 27400537   | Oil sealer LBH-55           | 4   |  |
| 22  | 2730288    | Bushing JSM-5560-60         | 4   |  |
| 23  | 27400535   | Oil sealer UHS-55           | 4   |  |
| 24  | MSK4317000 | Nut                         | 4   |  |
| 25  | MSK4319000 | Bushing                     | 4   |  |
| 26  | 27400532   | Oil sealer UHS-20           | 8   |  |
| 27  | 2730291    | Bushing JSM-2026-20         | 8   |  |
| 28  | 274005243  | Oil sealer DH-20            | 8   |  |
| 29  | 27401534   | O-ring G40                  | 4   |  |
| 30  | MSK4168000 | Spacer                      | 4   |  |
| 31  | MSK8311000 | Spacer                      | 2   |  |
| 32  | 2909057    | Fitting A-032-1 1/8         | 8   |  |
| 33  | 27283222   | Bearing,BM2220F33           | 2   |  |
| 34  | 2728447    | Rod eye,PHS M22x1.5 -R      | 1   |  |
| 35  | MSKA901001 | Cylinder(Oil pressure unit) | 1   |  |

| NO. | PART NO.   | DESCRIPTION  | QTY |  |
|-----|------------|--|-----|--|
| 36  | 2909188    | Gasket IDF-017 1-1/2"                                  | 1   |  |
| 37  | 2909189    | Heavy duty single pin ciamp IDF-015 1-1/2"             | 1   |  |
| 38  | 2909222    | Adapter with threaded on the end IDF-020 1-1/2"        | 1   |  |
| 39  | 27433226   | Pin 1/8  | 4   |  |
| 40  | 2909220    | Adapter with threaded on the end IDF-016 1-1/2"x1-1/4" | 1   |  |
| 41  | 29200163   | Cylinder CDM2B32-300-XC6                               | 4   |  |
| 42  | 272832025  | Bearing,BM2025F31                                      | 2   |  |
| 43  | 2705192    | Washer M20   | 2   |  |
| 44  | 2701157    | Hexagon socket head cap bolt M8x40 (S)                 | 8   |  |
| 45  | 2705301    | Spring washer M8                                       | 24  |  |
| 46  | 27284222   | Rod eye,PHS M10x1.25                                   | 4   |  |
| 47  | CV1K2A4000 | Washer   | 16  |  |
| 48  | MSK2357000 | Stopper shaft  | 8   |  |
| 49  | MSKA930000 | Cylinder fixed plate                                   | 4   |  |
| 50  | 2707125    | Nut M22  | 1   |  |
| 51  | 2909189    | Heavy duty single pin ciamp IDF-015 1-1/2"             | 1   |  |
| 52  | 2705129    | Washer M22   | 2   |  |
| 53  | 2707203    | Nut M8   | 24  |  |
| 54  | 2705152    | Washer M8  | 32  |  |
| 55  | 2701167    | Hexagon socket head cap bolt M5x20 (S)                 | 16  |  |
| 56  | 2705303    | Spring washer M5                                       | 1   |  |
| 57  | 2705150    | Washer M5  | 16  |  |
| 58  | 27004573   | Hexagon socket head cap bolt M12x40 (S)                | 8   |  |
| 59  | 2705305    | Spring washer M12                                      | 16  |  |
| 60  | 2705137    | Washer M12   | 16  |  |
| 61  | 2707209    | Nut M12  | 8   |  |
| 62  | 2700443    | Screw hex hd M10x35                                    | 8   |  |
| 63  | 2705304    | Spring washer M10                                      | 8   |  |
| 64  | 2705188    | Washer M10   | 8   |  |
| 65  | MSK8324000 | Nut  | 1   |  |
| 66  | MSKA931000 | Nut  | 4   |  |
| 67  | MSKA824001 | Connect plate  | 1   |  |
| 68  | 27401533   | O-ring G60   | 2   |  |
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# 9.4 INJECTION MECHANISM



MSKB40000

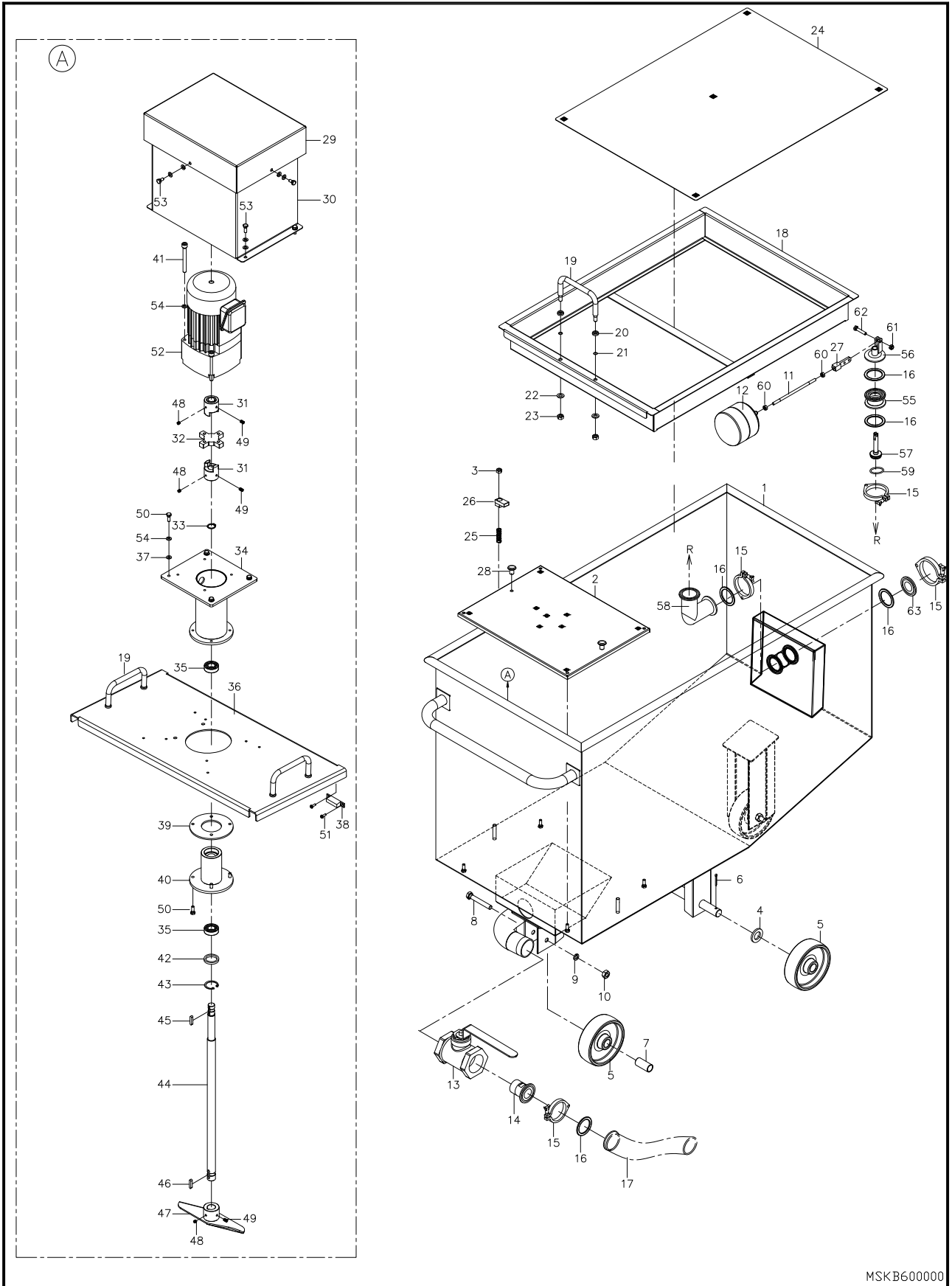
| NO. | PART NO.   | DESCRIPTION  | QTY |  |
|-----|------------|--|-----|--|
| 1   | MSKB401000 | Holder, guider cover                                   | 1   |  |
| 2   | MSKB402000 | Holder, guider cover                                   | 1   |  |
| 3   | MSKB403000 | Bracket, mounting tube                                 | 1   |  |
| 4   | MSKB404000 | Plate, mounting tube                                   | 1   |  |
| 5   | MSKB405000 | Plate  | 1   |  |
| 6   | MSKA406000 | Plate  | 2   |  |
| 7   | MSKB407000 | Plate, guider needle                                   | 3   |  |
| 8   | MSKB408000 | Plate, guider needle                                   | 1   |  |
| 9   | MSKB410000 | Plate, cover   | 1   |  |
| 10  | MSK2415000 | Post   | 8   |  |
| 11  | MSKA436000 | Bracket  | 2   |  |
| 12  | MSKB419000 | Pad  | 1   |  |
| 13  | MSK8433000 | Plate, nut   | 6   |  |
| 14  | 27049771   | Rings screw M12  | 4   |  |
| 15  | MSKB413000 | Mounting tube fixed plate                              | 1   |  |
| 16  | MSK8454000 | Post   | 6   |  |
| 17  | MSK8461000 | Needle   | 98  |  |
| 18  | MSK4421A00 | Bushing,needle set                                     | 196 |  |
| 19  | MSK8434000 | Disc   | 6   |  |
| 20  | MSKA435000 | Fixed shaft  | 6   |  |
| 21  | MSKB416000 | Bracket  | 1   |  |
| 22  | MSKB417000 | Bracket  | 1   |  |
| 23  | MSK8423000 | Pin set  | 4   |  |
| 24  | MSK8425000 | Store press fixed mount                                | 1   |  |
| 25  | MSK8426000 | Store press bottle                                     | 1   |  |
| 26  | MSK4412000 | Piston   | 98  |  |
| 27  | MSK4414000 | Bushing  | 16  |  |
| 28  | 27401551   | O-ring Ø52xØ4  | 2   |  |
| 29  | 27401559   | O-ring AS471   | 2   |  |
| 30  | 27401573   | O-ring P16   | 1   |  |
| 31  | 27401582   | O-ring Ø8xØ2   | 196 |  |
| 32  | 27401574   | O-ring P13   | 98  |  |
| 33  | 2909188    | Gasket IDF-017 1-1/2"                                  | 1   |  |
| 34  | 2909189    | Heavy duty single pin ciamp IDF-015 1-1/2"             | 1   |  |
| 35  | 2909220    | Adapter with threaded on the end IDF-016 1-1/2"x1-1/4" | 1   |  |



| NO. | PART NO.   | DESCRIPTION                 | QTY |  |
|-----|------------|-----------------------------|-----|--|
| 36  | 27401552   | O-ring Ø35xØ4               | 2   |  |
| 37  | 28672981   | Cap 1-1/4"                  | 2   |  |
| 38  | 27000674   | Screw, hex hd M6x100 (S)    | 32  |  |
| 39  | 27004116   | Screw, flat philip M6x20(S) | 148 |  |
| 40  | 27004118   | Screw, flat philip M6x60(S) | 10  |  |
| 41  | 27004114   | Screw, flat philip M6x30(S) | 77  |  |
| 42  | 27000678   | Hex socket hd screw M6x110  | 34  |  |
| 43  | 27071102   | Acorn nut M6 (S)            | 32  |  |
| 44  | 29090429   | Fitting nylon tube A-015    | 1   |  |
| 45  | MSK4420000 | Fitting                     | 1   |  |
| 46  | 2705302    | Washer, split lock M6 (S)   | 32  |  |
| 47  | 2701157    | Hex socket hd cap M8x40     | 16  |  |
| 48  | MSK8442000 | Cylinder body               | 1   |  |
| 49  | 27071104   | Acorn nut M16 (S)           | 10  |  |
| 50  | MSK2438001 | Bushing                     | 4   |  |
| 51  | MSKA437000 | Stopper shaft               | 4   |  |
| 52  | 2705301    | Washer, split lock M8 (S)   | 30  |  |
| 53  | 2705152    | Washer, M8 (S)              | 30  |  |
| 54  | 27004115   | Screw, flat philip M6x25(S) | 6   |  |
| 55  | 2909328    | Fitting nylon tube SPL602   | 1   |  |
| 56  | MSK8445000 | Pad                         | 1   |  |
| 57  | 27062051   | Ring R52                    | 1   |  |
| 58  | 2701168    | Hex socket hd screw M8x16   | 1   |  |
| 59  | MSK8447000 | Spring                      | 1   |  |
| 60  | MSK8444000 | Shaft                       | 1   |  |
| 61  | 2740163    | O-ring P21                  | 1   |  |
| 62  | MSK8443000 | Side cover                  | 1   |  |
| 63  | 27401584   | O-ring P46                  | 1   |  |
| 64  | MSK8446000 | Touch plate                 | 2   |  |
| 65  | 27401583   | O-ring P44                  | 2   |  |
| 66  | MSK8448000 | Piston                      | 1   |  |
| 67  | 27401573   | O-ring P16                  | 1   |  |
| 68  | 2702273    | Screw flat philip M8x20     | 1   |  |
| 69  | MSK2411000 | Mounting tube               | 98  |  |
| 70  | 2705328    | Spring washer M16           | 10  |  |



# 9.5 SUPPLY TRUCK

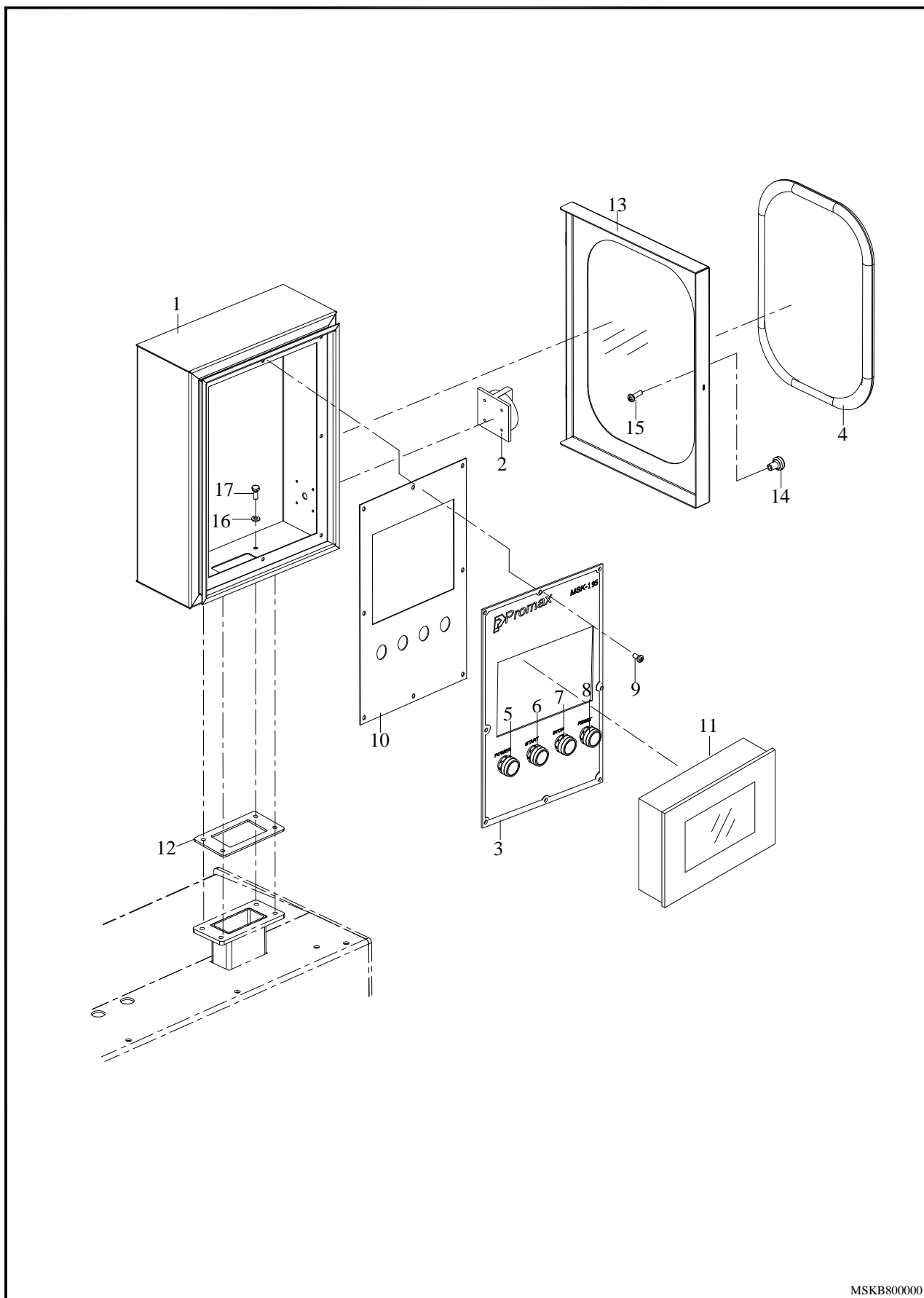


MSKB600000

| NO. | PART NO.   | DESCRIPTION  | QTY |  |
|-----|------------|--|-----|--|
| 1   | MSKB601000 | Barrel   | 1   |  |
| 2   | MSK4608001 | Sift net   | 1   |  |
| 3   | 27070222   | Nut, hex hd M8 (S)                                     | 2   |  |
| 4   | 2705185    | Washer, flat M20 (S)                                   | 2   |  |
| 5   | PB20102000 | Caster   | 4   |  |
| 6   | 27433227   | Pin  | 2   |  |
| 7   | PB20103000 | Bushing  | 2   |  |
| 8   | 274531202  | Screw, hex hd M10x60 (S)                               | 2   |  |
| 9   | 2705304    | Washer, split lock M10 (S)                             | 2   |  |
| 10  | 2707017    | Nut, hex hd M10 (S)                                    | 2   |  |
| 11  | MSKA621000 | Float cock arm   | 1   |  |
| 12  | MSKA622000 | Float cock   | 1   |  |
| 13  | 2909206    | Valve 1-1/2"   | 1   |  |
| 14  | 2909207    | Adapter with threaded on the end IDF-016 1-1/2"x1-1/2" | 1   |  |
| 15  | 2909189    | Heavy duty single pin ciamp IDF-015 1-1/2"             | 4   |  |
| 16  | 2909188    | Gasket IDF-017 1-1/2"                                  | 5   |  |
| 17  | MSK4175001 | Input tube 1-1/2"                                      | 1   |  |
| 18  | MSK8605000 | Frame  | 1   |  |
| 19  | MSK2606000 | Handle   | 3   |  |
| 20  | MSK4607000 | Noose  | 6   |  |
| 21  | 27401570   | O-Ring P8 (FPM.V.T)                                    | 6   |  |
| 22  | 2705301    | Washer, flat M8 (S)                                    | 2   |  |
| 23  | 2707203    | Nut, hex hd M8 (S)                                     | 2   |  |
| 24  | MSK8616000 | Sift net   | 1   |  |
| 25  | MSK4219000 | Spring   | 2   |  |
| 26  | MSK2618000 | Press block  | 2   |  |
| 27  | MSKA620000 | Rod  | 1   |  |
| 28  | MSK2617000 | Handle   | 2   |  |
| 29  | MSK2615000 | Cover  | 1   |  |
| 30  | MSK2614000 | Plate, cover   | 1   |  |
| 31  | A1122000   | Couler   | 2   |  |
| 32  | A1125000   | Rubber, coupling spacer sbllt                          | 1   |  |
| 33  | 2706031    | Ring S17(S)  | 1   |  |
| 34  | MSK4612000 | Plate, mount   | 1   |  |

| NO. | PART NO.   | DESCRIPTION                            | QTY |  |
|-----|------------|--|-----|--|
| 35  | 27280045   | Bearing 6003ZZ                         | 2   |  |
| 36  | MSK8610000 | Plate, mount                           | 1   |  |
| 37  | 2705151    | Washer, flat M6 (S)                    | 16  |  |
| 38  | 2852191    | Magnetic sensor airtac OMRON GLS-1 OMS | 1   |  |
| 39  | MSK4612040 | Washer                                 | 1   |  |
| 40  | MSK4613000 | Plate, bearing                         | 1   |  |
| 41  | 2701155    | Hexagon socket hd cap M6x80            | 4   |  |
| 42  | 27400525   | Oil sealer                             | 1   |  |
| 43  | 2706033    | Ring R35                               | 1   |  |
| 44  | MSK8611000 | Shaft, agitate                         | 1   |  |
| 45  | 2709001    | Key                                    | 1   |  |
| 46  | MSK4617000 | Key                                    | 1   |  |
| 47  | MSK2609000 | Fan, agitate                           | 1   |  |
| 48  | 2704601    | Screw, socket set M6x6                 | 3   |  |
| 49  | 2704603    | Screw, socket set M6x10                | 3   |  |
| 50  | 2700402    | Screw, hex hd M6x16 (S)                | 8   |  |
| 51  | 2703308    | Screw, round hd M4x12                  | 2   |  |
| 52  | 28320M17RW | Gear motor, 3PH 200V~240V 1/17 LH      | 1   |  |
| 53  | 2700401    | Screw, hex hd M6x12 (S)                | 8   |  |
| 54  | 2705302    | Washer, split lock M6 (S)              | 16  |  |
| 55  | MSKA617000 | Valve body                             | 1   |  |
| 56  | MSKA618000 | Valve body cover                       | 1   |  |
| 57  | MSKA619000 | Piston                                 | 1   |  |
| 58  | 2909227    | Adapter IDF-021 1-1/2 ELBOW 90         | 1   |  |
| 59  | 27401977   | O-Ring P22A                            | 1   |  |
| 60  | 2707204    | Nut M6                                 | 2   |  |
| 61  | 2707110    | NUT NYLOCK M6                          | 2   |  |
| 62  | 2700462    | Screw, hex hd M6x30 (S)                | 2   |  |
| 63  | 2909225    | Adapter IDF-014 1-1/2"                 | 1   |  |
|     |            |  |     |  |
|     |            |  |     |  |
|     |            |  |     |  |
|     |            |  |     |  |
|     |            |  |     |  |

## 9.6 OPERATOR BOX

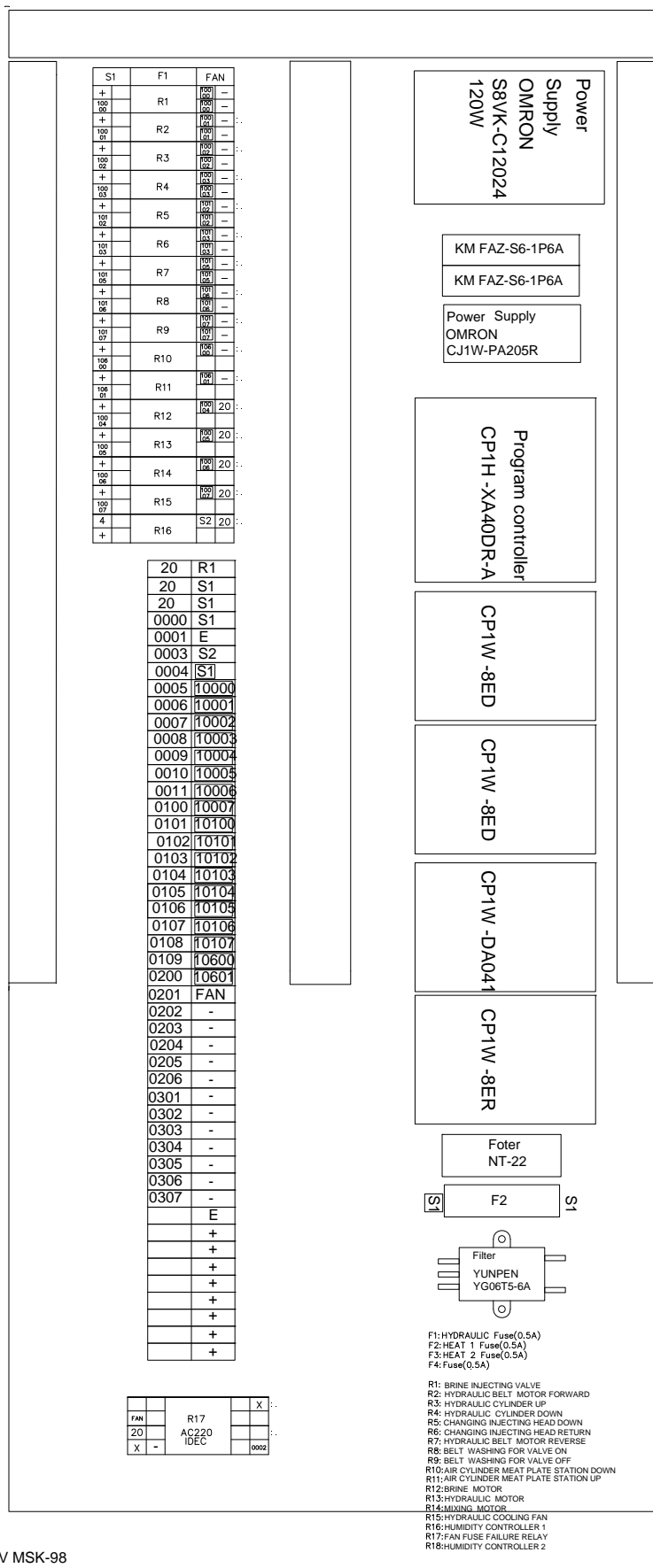


MSKB800000

| NO. | PART NO.   | DESCRIPTION                             | QTY |  |
|-----|------------|---|-----|--|
| 1   | MSKB801000 | Operator box                            | 1   |  |
| 2   | 28017126   | Switch MOELLER P3-63/EA/SW              | 1   |  |
| 3   | MSBA805000 | Control panel                           | 1   |  |
| 4   | MSK2810031 | Gasket                                  | 1   |  |
| 5   | 2871740    | Indicator lamp, white TE ZB4-BV01       | 1   |  |
|     | 2871748    | Body, indicator lamp TE ZB4-BV6         | 1   |  |
|     | 2871752    | bulb TE DL1-CF220                       | 1   |  |
| 6   | 2871761    | illuminated pushbutton head TE ZB4-BW33 | 1   |  |
|     | 2871748    | Body, indicator lamp TE ZB4-BV6         | 1   |  |
|     | 28704981   | bulb AB-9G-DC24V LED24V                 | 1   |  |
|     | 2871737    | circuit breaker                         | 8   |  |
| 7   | 2871762    | illuminated pushbutton head             | 1   |  |
|     | 2871748    | Body, indicator lamp TE ZB4-BV6         | 1   |  |
|     | 28704984   | bulb AB-9R-DC24V LED24V                 | 1   |  |
|     | 2871737    | circuit breaker                         | 1   |  |
| 8   | 2871704    | Button TE ZB4-BA5                       | 1   |  |
|     | 2871737    | Switch, contact TE ZB4-BZ101            | 1   |  |
| 9   | 2703332    | Screw, round hd M6x10                   | 4   |  |
| 10  | MSK2802002 | Control fixed plate                     | 1   |  |
| 11  | 2827045    | Human interface Pro-face PFXGP4301TADW  | 1   |  |
| 12  | MSK2809000 | Washer                                  | 1   |  |
| 13  | MSK2810001 | Operator platr cover                    | 1   |  |
| 14  | MSK2617000 | Handle                                  | 1   |  |
| 15  | 2701501    | Screw, round hd M6x12                   | 1   |  |
| 16  | 2705313    | Split lock washer                       | 1   |  |
| 17  | 2700415    | Scerw, hex hd M8x16                     | 1   |  |
|     |            |   |     |  |
|     |            |   |     |  |
|     |            |   |     |  |
|     |            |   |     |  |
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|     |            |   |     |  |

# 9.7 ELECTRICAL BOX

## Material disposition chart 1

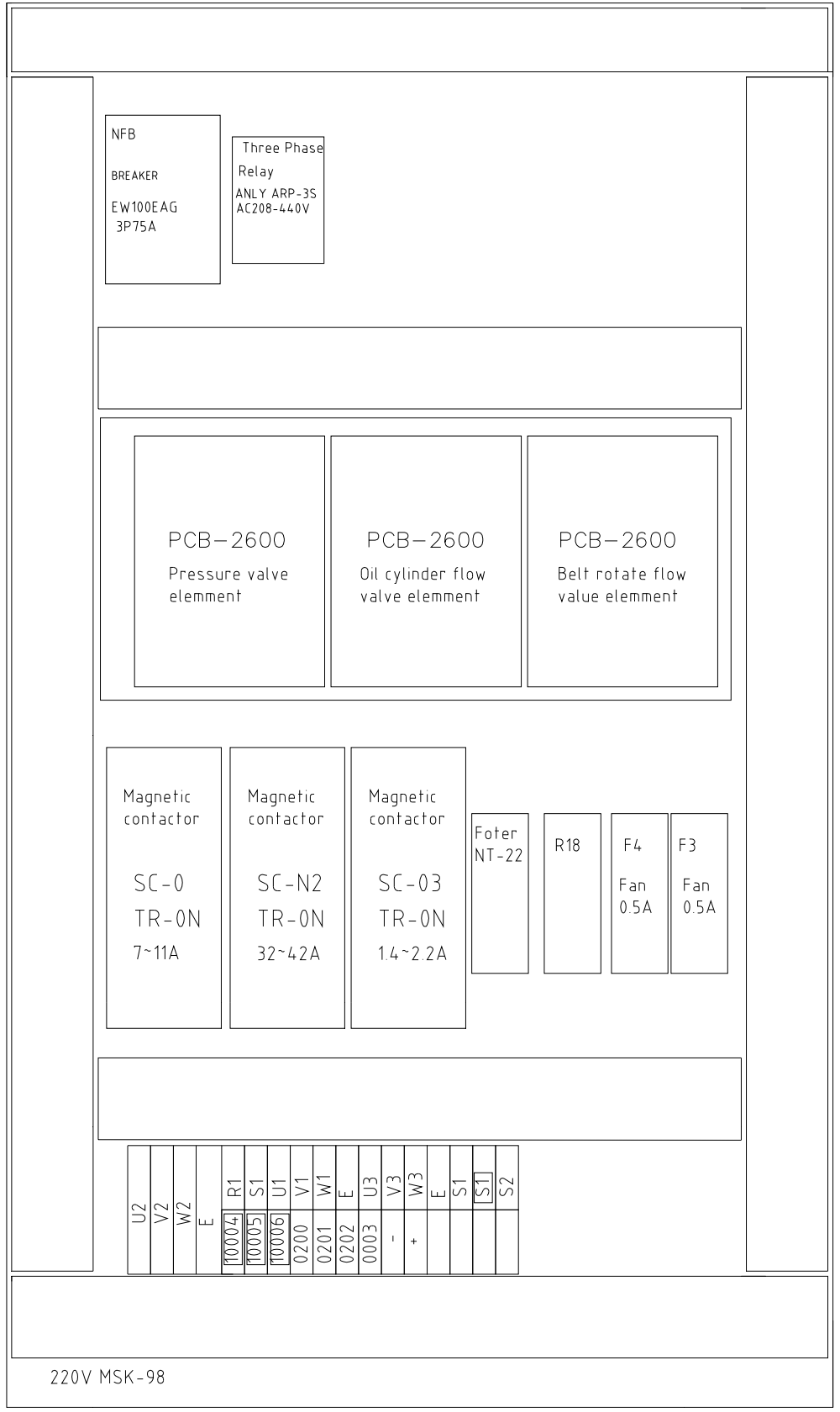


220V MSK-98

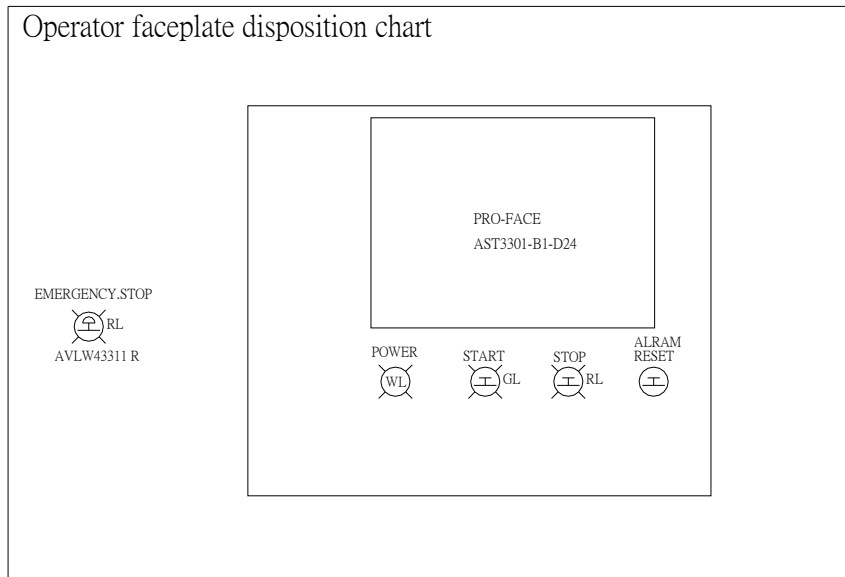


# 9.7 ELECTRICAL BOX

## Material disposition chart 2



## 9.7 ELECTRICAL BOX



| NO        | PART NO.   | SPECIFICATION  |
|-----------|------------|--|
| 1(50)     | 28560225   | Heater,PTC-100 100W AC220V                             |
| 2         | 2896528    | SUPPLY POWER, OMRON S8VK-C12024 120W                   |
| 2         | 2839101    | SUPPLY POWER OMRON CJ1W-PA205R                         |
| 3,4       | 2801825    | SWITCH KM FAZ-S6 1P6A                                  |
| 5         | 2806103    | ADAPTER, SIGNAL, F/MSK-98S PLC                         |
| 6         | 28201005   | CP1H-XA40DR-A , F/MSK-98S PLC                          |
| 6.1       | 2824569    | PORT, RS232(CP1W-CIF01), F/MSK-98S PLC                 |
| 7,8       | 28201013   | EXTENSION MODULE, CP1W-8ED, F/MSK-98S PLC              |
| 9         | 2820427    | MODULE, OMRON CP1W-DA041, F/MSK-98S PLC                |
| 10        | 28201012   | EXTENSION MODULE, CP1W-8ER, F/MSK-98S PLC              |
| 11(44)    | 2827307    | CONTROLLER, TEMPERATURE,NT-22R                         |
| 12        | 28900231   | HOLDER, FUSE, SF-111AE UL                              |
| 13        | 28961071   | FILTER,YUNPEN Y06TS-10A                                |
| 14        | 28900231   | HOLDER, FUSE, SF-111AE UL                              |
| 15-30(45) | 2830137    | RELAY, RJ2S-CL-D24                                     |
| 15-30(45) | 2831107    | BASE, RELAY SY4S-05D                                   |
| 31        | 2810271    | RELAY,IDEC RU4S-C-A220                                 |
|           | 2831106    | BASE, RELAY SY4S-05D                                   |
| 32        | 2843204*45 | TERMINAL, BLOCK PUW-20                                 |
| 32        | 2843205*1  | PLATE, TERMINAL BLOCK SIDE PUW-20L                     |
| 33        | 2802024    | CIRCUIT BREAKER,EW100 EAG 3P 75A                       |
| 34        | 2831054    | RELAY ARP-3S   |
| 35.36.37  | 2913357    | CONTROL BOARD, PROPORTIONAL VALVE, PCB-2600, F/MSK-98S |
| 38        | 28102294   | RELAY,SC-0 A 220V                                      |
| 39        | 2811193    | RELAY,THERMAL FUJI TRON 7-11A                          |
| 40        | 28102293   | RELAY ,SC-N2 A 220V 50/60HZ                            |
| 41        | 2811198    | RELAY, OVERLOAD,FUJI TR-N2 32-42A                      |
| 42        | 2810218    | MAGNETIC SWTICH, SC-03 3a1b 220V, F/MSK                |
| 43        | 2811186    | RELAY,THERMAL FUJI TRON 1.4-2.2A                       |
| 44        | 2827307    | Temperture controller                                  |
| 45        | 2830137    | Relay  |

## 9.7 ELECTRICAL BOX

|    |            |                                    |
|----|------------|------------------------------------|
| 46 | 28900231   | HOLDER, FUSE, SF-111AE UL          |
| 47 | 28900231   | HOLDER, FUSE, SF-111AE UL          |
| 48 | 2843213*4  | TERMINAL, BLOCK PTU-80             |
| 48 | 28432131*1 | TERMINAL, BLOCK PTU-80L            |
| 49 | 2843204*17 | TERMINAL, BLOCK PUW-20             |
| 49 | 2843205*1  | PLATE, TERMINAL BLOCK SIDE PUW-20L |
| 50 | 28560225   | PTC-100 100W AC220V                |

## 10. Packing List

| NO.                | PART NO.   | DESCRIPTION                     | QTY | NOTE |
|--------------------|------------|---------------------------------|-----|------|
| 1                  | @MSK-98    | MSK-98 brine injector           | 1   |      |
| 2                  | MSKB601000 | Brine vessel                    | 1   |      |
| 3                  | MSK2609A00 | Agitator                        | 1   |      |
| 4                  | 13702010   | Side door                       | 2   |      |
| 5                  | 137020A2   | Upper Right door                | 1   |      |
| 6                  | 137020A3   | Upper Left door                 | 1   |      |
| 7                  | MSK-98     | Brine injector introduction     | 1   |      |
| Vulnerable parts : |            |                                 |     |      |
| 1                  | 2740149    | O-ring P4                       | 104 |      |
| 2                  | 27401582   | O-ring P8                       | 104 |      |
| 3                  | 27401552   | O-ring $\phi$ 35x $\psi$ 4      | 1   |      |
| 4                  | 27401551   | O-ring $\phi$ 52x $\psi$ 4      | 1   |      |
| 5                  | 27400535   | Oil sealer UHS-55               | 4   |      |
| 6                  | 27400537   | Oil sealer LBH-55               | 4   |      |
| 7                  | 27400524   | Oil sealer DH-20                | 4   |      |
| 8                  | 27400532   | Oil sealer UHS-20               | 4   |      |
| 9                  | 2730291    | Bushing JUM-02-20               | 8   |      |
| 10                 | 2730288    | Bushing JSM-5560-60             | 4   |      |
| 11                 | MSK8461000 | Needle (include spare 6 pieces) | 104 |      |
| 12                 | MSK4412000 | Piston                          | 12  |      |

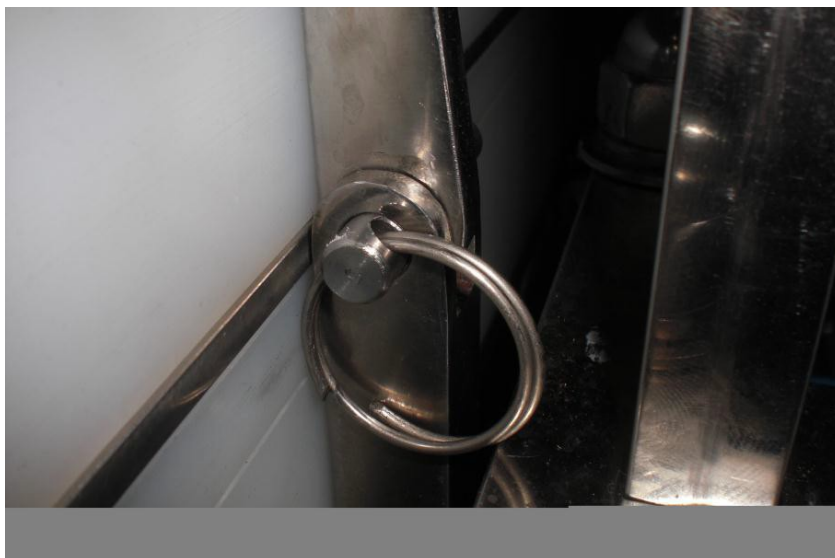
## **11. Needle Cleaning and Lubrication Procedure**

### **Caution/Alert**

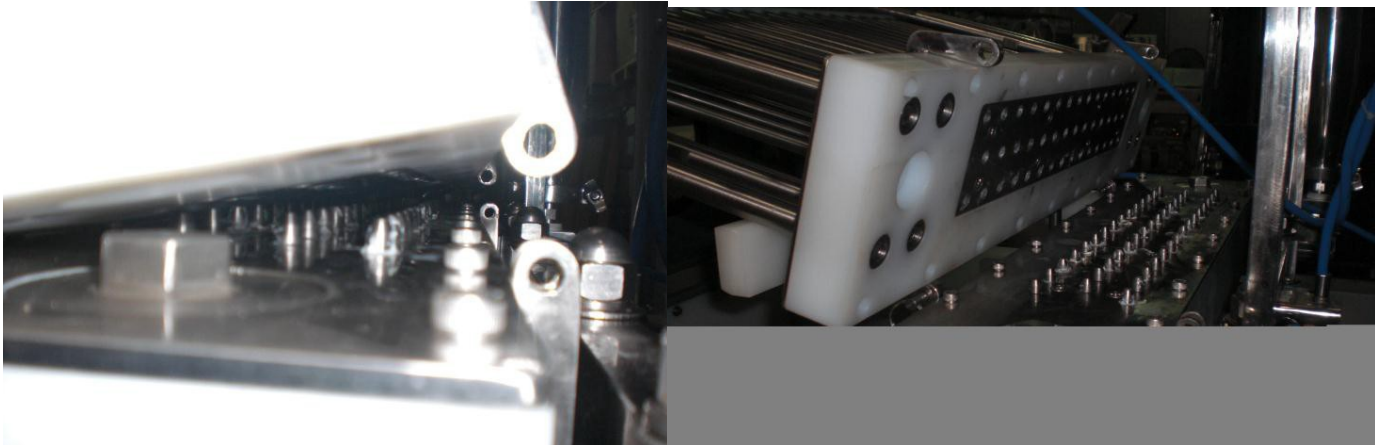
Step 1 – Turn “Needle Air” switch to off position.



Step 2 – Locate Push pins. Remove the two pins on the head, on the in-feed side.



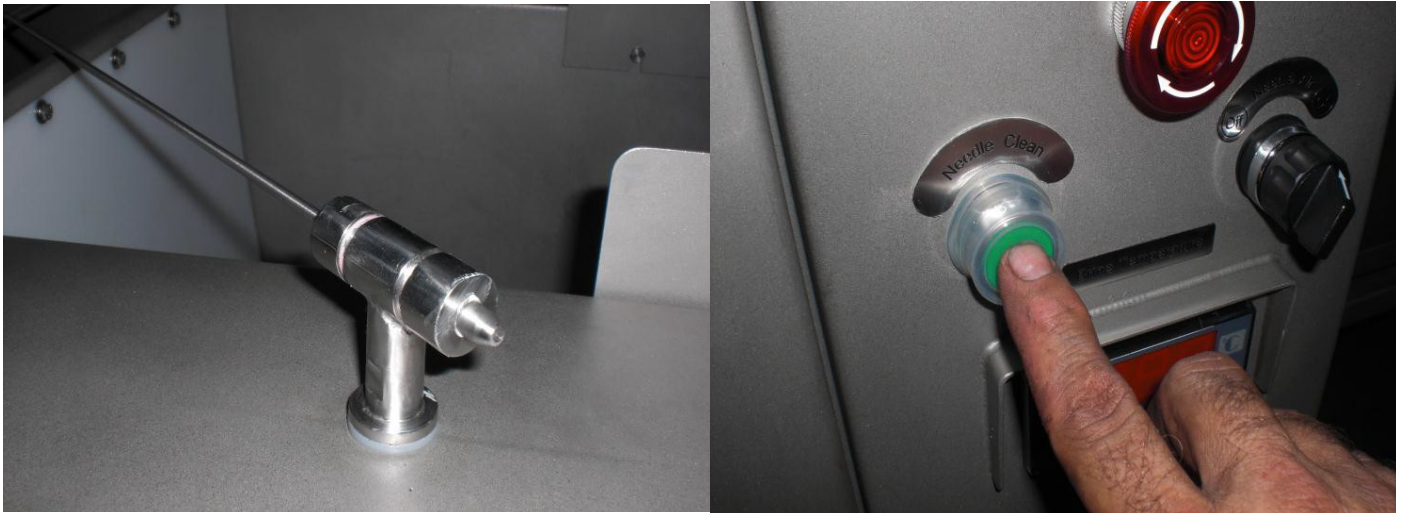
Step 3 – Carefully open the head, only enough to verify all needles are in the down position.  
if any needles are still in the raised position in the head, pull them down. Next finish opening the head until it rests on the white resting blocks.



Step 4 – Remove all needles by pulling straight up on the needle tops.



Step 5 – Insert each needle into the needle cleaner and press the “ Needle Clean” button to remove food material from inside the needles .



Step 6 – Before re-installing needles you must apply a thin coat of lube to each needle.



Step 7 – Re-install needles, insuring they are pushed all the way down firmly.



Step 8 – Add a small amount of lube to top tip of needles to lube the upper needle cylinders.



Step 9 – Additionally add a small amount of lube to each piston cylinder



Step 10 – Close head and re-install push pins.



Step 11 – Turn “Needle Air” switch back to “On” position



**Note:** Never operate machine with the “Needle Air” Switch in the “Off” position or without air connected to the machine. As this will cause damage to the needles and other components.



## 12. Water flow Diagram

